

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan, SWO form, and Drilling Assessment Checklist were completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- One soil boring will be advanced near MIP-03 and CB-05 for collection of 2 geotechnical samples. The boring will also be used to log soil from 25' bgs to 5 feet within competent bedrock. A borehole, CB-07 (near MIP-22), will be advanced to collect a shallow soil sample.
- Indoor air sampling is scheduled for May28 at 6317 Stratford Avenue.
- Shallow monitoring well development is scheduled for May 27, 2008.
- Deep monitoring well installation is scheduled for May 30, with casing installation for the deep well scheduled for May 28, 2008.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/23May08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 020

Date: 05/27/08

Weather: Cloudy and rain

Precip.: T-storms

°F Temp: Min: 58 Max 80

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location/Work Description |
|----------------|------------------------|--------------|-------------------|--|
| 1 | Field Team Leader | 9 | CH2M HILL | Soil and groundwater confirmation sampling |
| 1 | Field Team Member | 9 | CH2M HILL | Soil and groundwater confirmation sampling |
| 2 | Drilling Subcontractor | 4 | MRK Environmental | Soil and groundwater confirmation sampling |
| 1 | Project Manager | 2 | CH2M HILL | Oversight of deep well boring |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| CME 550 | 1 | 5/19/2008 | 5/27/2008 |
| Support truck | 1 | 5/19/2008 | 5/27/2008 |
| Skid steer | 1 | 5/27/2008 | 5/27/2008 |

3. Work Performed Today:

Soil and Groundwater Confirmation Sampling

CH2M HILL staff was onsite to advance the boring for deep monitoring well MW-117 and collect NOD groundwater samples near former Building 220. Soil boring CB-05 was advanced 3 feet east of the confirmation sample boring CB -05 to 45' bgs. Two Shelby tube geotechnical samples were collected at CB-05 for grain size, hydrometer and wet prep, and permeability analysis. The Shelby tubes were collected from 12-14 feet bgs and 17-19 feet bgs. One groundwater sample was collected from MW-111 for NOD analysis including total iron, VOC, TOC and alkalinity.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Indoor air sampling is scheduled for May 28 at 6317 Stratford Avenue.
- Shallow monitoring well development is scheduled for May 27, 2008
- Deep monitoring well installation is scheduled for May 30, with casing installation for the deep well scheduled for May 28, 2008.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Glynn Roberts/27May08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 021

Date: 05/28/08

Weather: Sunny

Precip.: None

°F Temp: **Min:** 58 **Max** 77

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade/Title | Hours (each) | Employer | Location/Work Description |
|----------------|------------------------|--------------|-------------------|---|
| 1 | Field Team Leader | 10 | CH2M HILL | Soil and groundwater confirmation sampling |
| 1 | Field Team Member | 10 | CH2M HILL | Soil and groundwater confirmation sampling |
| 2 | Drilling Subcontractor | 10 | MRK Environmental | Soil and groundwater confirmation sampling |
| 1 | Project Manager | 4 | CH2M HILL | Oversight of deep well boring and indoor air sampling |
| 1 | Project Manager | 4 | USACE | Oversight of deep well boring and indoor air sampling |
| 1 | Consultant | 5 | EPA Oversight | Oversight of deep well boring and indoor air sampling |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| CME 550 | 1 | 5/19/2008 | 5/27/2008 |
| Support truck | 1 | 5/19/2008 | 5/27/2008 |
| Skid steer | 1 | 5/27/2008 | 5/27/2008 |

3. Work Performed Today:

Indoor and Ambient Air Sampling

Three air sample summa canisters were placed in the basement at 6317 Stratford. One canister was placed in the northeast corner and two were placed in the southwest corner which included a field duplicate. The remaining canister was placed under the rear patio in the stairwell to the basement to sample ambient air.

The flow rates were preset from the lab at 3.5 ml/min so that a sample would be collected over a 24 hour period.

MW-117 Installation

CH2M HILL staff was onsite to advance the boring for deep monitoring well MW-117 and collect NOD groundwater samples near former Building 220. Soil boring MW-117 was advanced 2 feet west of the MIP location MIP-03 to 44' bgs. A small amount of cement grout was then placed in the boring and the steel 6 inch casing was installed through the 8.25 inch augers and into the grout. The augers were then removed and the casing grouted into place.

NOD Groundwater Sampling

The remaining volume for the NOD groundwater sample was collected from MW-111.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

St. Louis Ordnance Plant, Former Hanley Area

Remedial Investigation

St. Louis, Missouri



9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Indoor air sampling canisters will be collected from 6317 Stratford Avenue on May 29th.
- Shallow monitoring well development is scheduled for May 29th.
- The remaining temporary piezometers are scheduled to be abandoned on May 29th.
- Well completion for MW-115 is scheduled to be installed on May 29th.
- Air rotary drilling for the deep monitoring well installation is scheduled for Saturday May 31st.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Glynn Roberts/28May08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 022

Date: 05/29/08

Weather: Clear and sunny

Precip.: No

°F Temp: Min: 58 Max 82

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location/Work Description |
|----------------|-----------------------|--------------|-------------------------------|--|
| 1 | Field Team Leader | 10 | CH2M HILL | Monitoring well development, piezometer abandonment, deep well preparation |
| 1 | Field Team Member | 9 | CH2M HILL | Monitoring well development, piezometer abandonment, deep well preparation |
| 2 | Driller Subcontractor | 9 | MRK Environmental Exploration | Monitoring well development, piezometer abandonment, deep well preparation |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|----------------------------|------|-----------------|----------------------|
| CME 550 ATV drill rig | 1 | 05/21/08 | 05/29/08 |
| Whale pump and surge block | 1 | 05/21/08 | 05/29/08 |

3. Work Performed Today:

Shallow Monitoring Well Development

CH2M HILL staff provided oversight during the development of monitoring well MW-116. Prior to development, approximately 75 gallons of groundwater was calculated for the purge volume (5 well volumes). Water quality parameters were also recorded during well development. The monitoring well was developed by inserting a whale pump near the bottom of the well and removing an initial volume of 5 gallons of groundwater. A surge block constructed of decontaminated 1" PVC pipe and a slip cap was then moved throughout the entire length of the monitoring well screen to remove any fines from the sand filter pack. The whale pump was returned to the well and the process repeated. During development activities, the monitoring well went dry after approximately 17 gallons was recovered. The well was allowed to recharge until groundwater was observed above the pump. Development activities were concluded after the well purged dry a second time. Water quality readings stabilized within criteria during the final two readings. The groundwater was still turbid and brown following development. The development water was containerized and the drum properly labeled.

Deep Monitoring Well Activities

CH2M HILL and its subcontractor, MRK Environmental, checked the steel casing at deep monitoring well MW-117 for settling of grout that may have occurred. The grout surrounding the exterior of the steel casing settled approximately 6 feet bgs. Additional grout was used to bring it to just below ground surface. Approximately 20 feet of grout was observed within the casing. It was noted that 15 gallons of potable water was introduced in the casing during grouting activities on May 28, 2008. Water was used to keep the grout in place. Approximately 18 gallons of potable water was removed from the casing using a whale pump, with 1.3 feet remaining. The water level will be gauged tomorrow to ensure that a complete seal was achieved. The potable water was containerized and the drum properly labeled.

Temporary Piezometer Abandonment

Following the removal of the temporary piezometers at the 4 soil boring locations, each borehole was abandoned with hydrated bentonite chips.

Soil Confirmation Sampling

One soil confirmation sample was collected at 2-3 bgs near MIP-22 (along Stratford Avenue and near the western-most edge of the plume). A sample was collected at the shallow interval based on the response observed during the MIP investigation.

The soil sample was shipped to PEL under chain-of-custody via FedEx priority overnight.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Soil cores were logged in accordance with USCS and field screened with a MultiRAE equipped with a 10.7 eV lamp for VOC detection. Water quality parameters were recorded using an YSI 650 MDS and Hach Turbidimeter during monitoring well development.

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

Dan Price instructed CH2M HILL staff to have MRK remove the potable water from the casing at deep monitoring well MW-117. This was to ensure that a complete seal was achieved during grouting activities.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held onsite. A Pre-Task Safety Plan was reviewed and signed. The Health & Safety Plan, Site Security Plan, and BBLPS were reviewed with the field staff and driller subcontractor. Potential hazards, PPE, emergency contacts, and the hospital route were discussed. No safety violations were observed.

10. Remarks:

None

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Concrete pad and well protector installation at MW-115
- Monitoring well development at MW-115
- Gauging of MW-117

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/29May08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 023

Date: 05/30/08

Weather: Clear and sunny

Precip.: None

°F Temp: Min: 72 Max 88

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location Work Description |
|----------------|-----------------------|--------------|-------------------------------|---|
| 1 | Field Team Leader | 8 | CH2M HILL | Monitoring well development, concrete pad installation, deep well preparation |
| 1 | Field Team Member | 8 | CH2M HILL | Monitoring well development, concrete pad installation, deep well preparation |
| 2 | Driller Subcontractor | 8 | MRK Environmental Exploration | Monitoring well development, concrete pad installation, deep well preparation |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|----------------------------|------|-----------------|----------------------|
| Whale pump and surge block | 1 | 05/29/08 | |

3. Work Performed Today:

Shallow Monitoring Well Development

CH2M HILL staff provided oversight during the development of monitoring well MW-115. Prior to development, the required purge volume (5 well volumes) was calculated to be approximately 51 gallons of groundwater. Water quality parameters were also recorded during well development. A surge block constructed of decontaminated 1" PVC pipe and a slip cap was moved throughout the entire length of the monitoring well screen to remove any fines from the sand filter pack. A whale pump was inserted into the well and the surging process repeated two more times. During development activities, the monitoring well went dry after approximately 14 gallons was recovered. The well was allowed to recharge until groundwater was observed above the pump. Development activities were concluded after the well purged dry a second time. A total volume of 15 gallons was removed from MW-115. The groundwater was moderately turbid following development. The development water was containerized and the drum properly labeled.

Deep Monitoring Well Activities

CH2M HILL and its subcontractor, MRK Environmental, gauged the water in the steel casing at proposed deep monitoring well MW-117. During previous gauging of the steel casing (May 29), approximately 1.3 feet of water was observed. During today's gauging event, approximately 1.8 feet of water was observed. It was discussed with the driller why there was a slight increase in water in the casing. It was stated that potable water used to produce the grout (approximately 40 gallons) was being forced out of the grout during the curing process. Approximately 20 feet of grout exists in the casing, making it very unlikely that groundwater infiltration is occurring. The remaining water observed in the casing was pumped out and the casing gauged throughout the day. Two hours after pumping the casing dry, less than 1" of water was observed and then pumped. The casing was gauged a final time, with a trace amount of water observed. The casing will be checked on Monday, June 2 for the presence of water.

Concrete Pad Installation

Following well development at MW-115 a 4'x4'x4" concrete pad and well protector were installed. .

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

None.

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

St. Louis Ordnance Plant, Former Hanley Area

Remedial Investigation

St. Louis, Missouri



8. Verbal Instructions Given/Controversial Matters:

Dan Price instructed CH2M HILL staff to remove the remaining potable water from the casing at deep monitoring well MW-117. This was to ensure that a complete seal was achieved during grouting activities.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held onsite. A Pre-Task Safety Plan was reviewed and signed. The Health & Safety Plan, Site Security Plan, and BBLPS were reviewed with the field staff and driller subcontractor. Potential hazards, PPE, emergency contacts, and the hospital route were discussed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling of 9 existing wells and 2 newly-installed shallow wells
- Deep monitoring well installation at MW-117 on June 7, 2008

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted

Tony Swierczek/30May08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 024

Date: 06/02/08

Weather: Sunny

Precip.: None

°F Temp: Min: 75 Max 89

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location/Work Description |
|----------------|-------------------|--------------|-----------|----------------------------------|
| 1 | Field Team Leader | 8 | CH2M HILL | Groundwater gauging and sampling |
| 1 | Field Team Member | 8 | CH2M HILL | Groundwater gauging and sampling |
| 1 | Chemist | 3 | USACE | Oversight groundwater sampling |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| Water Level Indicator | 1 | 05/29/08 | |

3. Work Performed Today:

MW-117 Installation

Water trapped in the casing was purged. Depth to water was initially 6.50 feet btoc. The casing was purged dry with approximately 30 gallons of water being removed. The depth to grout was measured at 23.8 feet btoc.

Groundwater Sampling

The water levels of the onsite and offsite well network were gauged. Prior to gauging the wells, the caps were removed so that the water levels could stabilize. A minimum of an hour was allowed for the water level stabilization prior to gauging. MW-107 had water in the completion above the casing. The water was purged prior to removing cap. MW-103 exhibited a lot of pressure when the cap was removed. After the removal of the cap, a strong odor of H₂S was noted.

4. Results of Control Activities:

Not applicable

St. Louis Ordnance Plant, Former Hanley Area

Remedial Investigation

St. Louis, Missouri

**5. Tests Performed as Required by Plans and/or Specifications:**

None.

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification-Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling of 9 existing wells and 2 newly-installed shallow wells
- Deep monitoring well installation at MW-117 on June 5, 2008

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Glynn Roberts/02June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 025 Date: 06/03/08
Weather: Mostly sunny Precip.: None °F Temp: Min: 72 Max: 89

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade/Title | Hours (each) | Employer | Location/Work Description |
|----------------|------------------------|--------------|-------------------|--|
| 1 | Field Team Leader | 9 | CH2M HILL | Groundwater sampling |
| 1 | Field Team Member | 9 | CH2M HILL | Groundwater sampling |
| 2 | Drilling Subcontractor | 3 | MRK Environmental | Continued installation of MW-117 |
| 1 | QC Oversight | 4 | CH2M HILL | Oversight of deep well boring and groundwater sampling |
| 1 | Chemist | 9 | USACE | Oversight groundwater sampling |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| CME 550 | 1 | 6/03/2008 | 6/03/2008 |
| Support truck | 1 | 6/03/2008 | 6/03/2008 |

3. Work Performed Today:

MW-117 Installation

CH2M HILL and MRK Environmental were onsite to grout the inside of the casing at MW-117 to surface to seal off any water leaking into the casing. The depth to water was measured and was noted to be at 19.18 btoc. The water was purged and a cement grout was tremied into the casing to surface.

Groundwater Sampling

Monitoring wells MW-111, MW-114 and MW- 106 were purged and sampled. MW-111 was sampled for VOCs, dissolved gases, anions and dissolved metals. MW-114 and MW-116 were sampled for VOCs only. The wells were purged until the groundwater parameters had stabilized. Approximately 2.50 gallons of water was purged from MW-111. Approximately 1.2 gallons of water was purged from MW-114 and 3.5 gallons was removed from MW-106. All samples were immediately placed on ice and then shipped at the end of the day.

St. Louis Ordnance Plant, Former Hanley Area

Remedial Investigation

St. Louis, Missouri

**4. Results of Control Activities:**

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling will continue on June 4th.
- Air rotary drilling of MW-117 to set the screen into bedrock through the surface casing is scheduled for June 5th.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Glynn Roberts/03June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 026

Date: 06/03/08

Weather: Partly cloudy

Precip.: Trace

°F Temp: Min: 78 Max 92

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location-Work Description |
|----------------|-------------------|--------------|-------------------|-----------------------------------|
| 1 | Field Team Leader | 9 | CH2M HILL | Groundwater sampling |
| 1 | Field Team Member | 9 | CH2M HILL | Groundwater sampling |
| 1 | Oversight | 2 | Chamberlain Group | Oversight of groundwater sampling |
| 1 | Project Manager | 2 | USEPA | Oversight of groundwater sampling |
| 1 | Chemist | 9 | USACE | Oversight of groundwater sampling |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| | | | |

3. Work Performed Today:

Groundwater Sampling

Monitoring wells MW-108, MW-109, MW-113, and MW-116 were purged and sampled. All wells were sampled for VOCs. The wells were purged until the groundwater parameters had stabilized. Approximately 2.0 gallons of water was purged from MW-108. Approximately 1.0 gallon of water was purged from MW-109. Approximately 2.2 gallons was purged from MW-113 and 1.5 gallons was removed from MW-116. All samples, including samples collected on June 3, were immediately placed on ice and then shipped at the end of the day.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

Groundwater samples collected at MW-111 were not submitted for laboratory analyses. Sample bottles used to collect MNA analyses appeared to be leaking preservative, therefore the sample bottles used at MW-111 were called into question. New sample bottles have been ordered and MW-111 will be resampled.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling will continue on June 5th.
- Air rotary drilling of MW-117 to set the screen into bedrock through the surface casing is scheduled for June 5th.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/04June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 027

Date: 06/05/08

Weather: Partly cloudy

Precip.: None

°F Temp: Min: 78 Max 92

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location-Work Description |
|----------------|-------------------|--------------|-----------|-------------------------------------|
| 1 | Field Team Leader | 12 | CH2M HILL | Groundwater sampling |
| 1 | Field Team Member | 11 | CH2M HILL | Oversight of deep well installation |
| 1 | Project Manager | 2 | USEPA | Oversight of groundwater sampling |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| CME 550 drill rig | 1 | 06/05/08 | 06/05/08 |
| Air compressor | 1 | 06/05/08 | 06/05/08 |

3. Work Performed Today:

Groundwater Sampling

Monitoring wells MW-107, MW-110, MW-112, and MW- 115 were purged and sampled. Monitoring well MW-112 was sampled for VOCs and the remaining wells sampled for VOCs, dissolved metals (Fe, Mn), dissolved gases (methane, ethane, ethane), and anions (sulfate, nitrate, chloride). The wells were purged until the groundwater parameters had stabilized. Approximately 1.0 gallon of water was purged from MW-107. Approximately 1.2 gallons of water was purged from MW-110 and MW-112. Approximately 1.5 gallons was purged from MW-115. All samples were immediately placed on ice and then shipped at the end of the day.

Deep Monitoring Well Installation

CH2M HILL staff were onsite to oversee the installation of deep monitoring well MW-117. Air rotary drilling methods were used to advance the boring to a termination depth of 54 feet bgs. The drilling rods were initially advanced to 18 feet bgs and retracted to observe any groundwater infiltration into the steel casing. No water was observed. The borehole was then advanced within 1 foot of the bottom of the steel casing (43 feet bgs) and allowed to sit for a period of one hour to see if any accumulation of groundwater occurred in the casing. None was observed. After the borehole was advanced to the bottom of the casing, the drill rods were retracted and a minimal amount of water was observed. The borehole dried up as air rotary activities continued. The borehole was terminated at a depth of 54 feet bgs. Approximately 2 feet of water was observed at the bottom of the boring. As the drill rods were retracted, the remaining grout inside the steel casing collapsed at approximately 34 feet bgs. Water was added to clear the obstruction. Following reaming of the borehole, no water was observed. A 2" PVC monitoring well consisting of a 5 foot screen and 49 feet of casing was installed at the termination depth. Sand filter pack was placed from the bottom of the boring to 4 feet above the screen. High solids bentonite grout was tremied from the top of the sand filter pack to ground surface. The surface completion consists of a 4' x 4' concrete pad and flush mount well protector. The monitoring well will be gauged during groundwater sampling activities on June 6, 2008.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification/Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. Heat-related issues were discussed. A drilling self-assessment checklist and Safe Work Observation form were completed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling will continue on June 6th.
- Monitoring well MW-117 will be gauged, developed and sampled.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/05June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 028

Date: 06/06/08

Weather: Partly cloudy

Precip.: None

°F Temp: Min: 83 Max 92

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade Title | Hours (each) | Employer | Location Work Description |
|----------------|-------------------|--------------|-----------|---|
| 1 | Field Team Leader | 6 | CH2M HILL | Groundwater sampling and gauging of deep well |
| 1 | Field Team Member | 6 | CH2M HILL | Groundwater sampling and gauging of deep well |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| | | | |

3. Work Performed Today:

Groundwater Sampling

Monitoring well MW-111 was re-sampled, as laboratory bottles containing preservatives appeared to be leaking prior to use on 06/04/08. Monitoring well MW-111 was purged, sampled, and submitted for laboratory analysis of VOCs, dissolved metals (Fe, Mn), dissolved gases (methane, ethane, ethane), and anions (sulfate, nitrate, chloride). The well was purged until the groundwater parameters had stabilized. It was noted that elevated DO concentrations were observed during low-flow activities over those seen during the initial sampling. Elevated DO readings may be a result of air rotary activities at the newly installed deep monitoring well MW-117 located immediately adjacent to well MW-111. Approximately 1.5 gallons of water was purged from MW-111. The samples were immediately placed on ice and then shipped to the analytical laboratory at the end of the day.

Deep Monitoring Well Gauging

CH2M HILL staff were onsite to gauge the water level at deep monitoring well MW-117. Depth to water was recorded at 15.98 feet bgs, with a total depth of 54.20 feet bgs. The well will be developed on June 9, 2008.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

Not applicable

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held on site. A Pre-task Safety Plan was completed. Heat-related issues were discussed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

St. Louis Ordnance Plant, Former Hanley Area

Remedial Investigation

St. Louis, Missouri



12. Near Future Plans

- Gauging, well development, and sampling at MW-117.
- IDW handling and disposal.
- Surveying of all MIP, surface soil, and confirmation sample locations.

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/06June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORTDaily Report No: 029Date: 06/09/08Weather: Clear and partly cloudy Precip.: None °F Temp: Min: 78 Max: 91**1. Personnel and Area(s) of Responsibility:**

| # of Personnel | Trade Title | Hours (each) | Employer | Location/Work Description |
|----------------|-------------------|--------------|-------------------|--|
| 1 | Field Team Leader | 7 | CH2M HILL | Deep monitoring well development, check water quality at MW-115, site clean-up |
| 1 | Field Team Member | 4 | CH2M HILL | Deep monitoring well development, check water quality at MW-115, site clean-up |
| 1 | Oversight | 1 | Chamberlain Group | Oversight of deep monitoring well development |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------------------|------|-----------------|----------------------|
| Mini-monsoon pump and surge block | 1 | 06/09/08 | |

3. Work Performed Today:

Deep Monitoring Well Development

CH2M HILL staff developed monitoring well MW-117. Prior to development, the required purge volume (5 well volumes) was calculated to be approximately 70 gallons of groundwater. Water quality parameters were also recorded during well development. The monitoring well screen was surged prior to insertion of the mini-monsoon pump. The pump was inserted into the well and the surging process repeated two more times. During development activities, the monitoring well was surged after approximately 7 gallons was recovered. The well went dry after approximately 12 gallons was removed. The well was allowed to recharge until groundwater was observed above the pump. Development activities were concluded after the well purged dry a second time. A total volume of 13 gallons was removed from MW-117. The groundwater was turbid following development. The development water was containerized and the drum properly labeled.

Monitoring Well MW-115

CH2M HILL mobilized to newly-installed shallow monitoring well MW-115 to check the pH. It was noted during well development and groundwater sampling at MW-115 that elevated pH readings were observed. Disposable tubing and a peristaltic pump was used to recover a small amount of groundwater from the midpoint of the screened interval. The pH was observed at 11.55. The groundwater within the monitoring well will be purged and the water quality checked following recharge on June 12, 2008.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

None.

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

It was discussed with Dan Price to purge monitoring well MW-115 on June 12, 2008, based on observations noted at this well.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held onsite. A Pre-Task Safety Plan was reviewed and signed. The Health & Safety Plan, Site Security Plan, and BBLPS were reviewed with the field staff. A Safe Work Observation Form was completed. Potential hazards, PPE, emergency contacts, and the hospital route were discussed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Groundwater sampling of monitoring well MW-117 on June 12, 2008
- Oversight of surveying activities on June 12, 2008

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/09June08

Field Team Leader, CH2M HILL / Date

DAILY QUALITY CONTROL REPORT

Daily Report No: 030

Date: 06/12/08

Weather: Clear and sunny

Precip.: None

°F Temp: Min: 80 Max 92

1. Personnel and Area(s) of Responsibility:

| # of Personnel | Trade/Title | Hours (each) | Employer | Location/Work Description |
|----------------|-------------------|--------------|--------------------|---|
| 1 | Field Team Leader | 7 | CH2M HILL | Deep monitoring well groundwater sampling, purge/check water quality at MW-115, oversee land surveying, site clean-up |
| 1 | Field Team Member | 7 | CH2M HILL | Deep monitoring well groundwater sampling, purge/check water quality at MW-115, oversee land surveying, site clean-up |
| 2 | Land Surveyors | 8 | Ferguson Surveyors | Survey in all locations associated with the RI fieldwork |

2. Equipment Used:

| Equipment Description | Qty. | Date of Arrival | Date of Safety Check |
|-----------------------|------|-----------------|----------------------|
| Peristaltic pump | 1 | | |
| Mini-monsoon pump | 1 | | |

3. Work Performed Today:

Deep Monitoring Well Groundwater Sampling

CH2M HILL staff was onsite to collect groundwater samples at monitoring well MW-117. The well was purged until at least 2 system volumes were removed and groundwater parameters had stabilized. Approximately 2.0 gallons of water were purged from MW-117. The samples were submitted for laboratory analysis of VOCs. All samples were immediately placed on ice and then shipped via FedEx for priority overnight delivery.

Water Quality Check at MW-115

CH2M HILL mobilized to newly-installed shallow monitoring well MW-115 to purge the well and check the pH following recharge. Approximately 9 gallons of groundwater was removed prior to the well pumping dry. Monitoring well MW-115 was allowed to recharge for approximately 4 hours prior to checking water quality. A YSI 650 MDS was utilized to check the pH. The pH concentration was recorded at 10.42 units, slightly lower than the concentration observed during groundwater sampling activities on June 5.

Land Surveying

Ferguson Surveyors were onsite to survey all locations associated with the RI fieldwork. The 2-person crew utilized a robotic total station to record horizontal and vertical data at the surface soil locations, MIP locations, confirmation boring locations, and newly-installed monitoring well locations.

4. Results of Control Activities:

Not applicable

5. Tests Performed as Required by Plans and/or Specifications:

None.

6. Materials Received:

| Description | Quantity | No. of Trucks | Compliant with Specs? |
|----------------|----------|---------------|-----------------------|
| Not applicable | | | |

7. Submittals Reviewed and Approved:

| Submittal Number(s) | Applicable Specification Plan Section | Approved By | Action |
|---------------------|---------------------------------------|-------------|--------|
| Not applicable | | | |

8. Verbal Instructions Given/Controversial Matters:

None.

9. Job Safety: (Report violations; corrective instructions given; corrective action taken)

A site safety meeting was held onsite. A Pre-Task Safety Plan was reviewed and signed. The Health & Safety Plan, Site Security Plan, and BBLPS were reviewed with the field staff and subcontractor. Walking hazards, heat-related hazards, PPE, emergency contacts, and the hospital route were discussed. No safety violations were observed.

10. Remarks:

None.

11. Lost Days/Time Impacts/Equipment Repairs:

None.

12. Near Future Plans

- Completion of land surveying activities (No oversight by CH2M HILL)

On behalf of Conti Environmental, Inc. and its' subcontractors, I certify that this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted.

Tony Swierczek/12June08

Field Team Leader, CH2M HILL / Date

Field Change Notices

FIELD CHANGE NOTICE

Contract No.: W912DQ-D-05-0002
 Delivery Order No.: 0007
 Project Name: Former St. Louis Ordnance Plant,
St. Louis, Missouri

FCN No.: 001
 Page: 1 of 1
 Date: 5/16/2008
 Revision No.: 0

ORIGINAL REQUIREMENTS:

In accordance with shallow monitoring well installation procedures detailed in the May 2008 Remedial Investigation Work Plan (Field Sampling Plan), the type of grout used for the annular seal will consist of high solids sodium bentonite slurry, at least 20 to 30 percent weight by solids. The grout will be mixed in accordance with manufacturer's instructions to achieve a density of at least 9.4 pounds per gallon. The grout density will be measured with a mud scale after each batch has been mixed to ensure the proper density has been achieved. The monitoring wells will be completed with flush-mount well protectors. The flush-mount well protector will consist of a watertight well vault equipped with a cast-iron lid and aluminum skirt.

FIELD CHANGE & DOCUMENTATION:

DOCUMENTED BY: Anthony Swierczek

During shallow monitoring well installation, it was noted that the drillers were not equipped with a mud scale to properly mix the high solids sodium bentonite slurry to specifications. Previous experience with these drillers has demonstrated that their standard mixture has achieved the minimum grout density required by manufacturers. The drillers were instructed to mix a thicker batch of grout slurry to be conservative and ensure that the density specification was met. As instructed the driller mixed and installed a thicker batch of grout that did not settle between the time it was placed and the well protector was installed at MW-116. A 4' x 4' concrete pad will be installed at MW-115 during the week of May 19, 2008.

During shallow monitoring well installation at MW-115, it was noted that thick vegetation and ground cover in the area may impede future groundwater sampling events at MW-115. To reduce the chance of thick vegetation obscuring the location of MW-115, CH2M HILL field staff and the Task Manager decided to install the monitoring well as an above ground completion.

TECHNICAL JUSTIFICATION:

Previous experience with these drillers has demonstrated that their standard mixture has achieved the minimum grout density required by manufacturers. Monitoring well MW-115 was completed above ground due to thick vegetation and ground cover in the area.

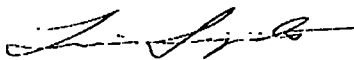
SUBMITTAL(S) REFERENCE NO.:

| | | | |
|------------------------|--|--|---------------------------------|
| REASON FOR CHANGE | <input checked="" type="checkbox"/> Modification | <input type="checkbox"/> Addition/Deletion | |
| WVN REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | CHANGE ORDER NO.: <u>NA</u> |
| POP EXTENSION REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | Additional Time (wk): <u>NA</u> |

APPLICABLE CONTRACT DOCUMENT(S):

Remedial Investigation Work Plan, Field Sampling Plan

CONTRACTOR APPROVAL



Luis Seijido, PE
Project Manager

05/23/08
Date



Jeffrey Haberl
QCO

05/23/08
Date

USACE APPROVAL

CONREP

Date

COR

Date

This direction, whether later determined to be fee bearing or not, shall not be considered authorization to exceed the current contract Estimated Cost under the Schedule. The Government is not obligated to reimburse the contractor for costs incurred in excess of the estimated costs specified in the schedule. The contractor is not obligated to continue performance under this contract including action under the Termination Clause of this contract, or otherwise incur costs in excess of the estimated cost specified in the schedule, until the Contracting Officer (i) notifies the contractor in writing that the estimated cost has been increased and (ii) provides a revised estimated total cost of performing this contract.

FIELD CHANGE NOTICE

Contract No.: W912DQ-D-05-0002
 Delivery Order No.: 0007
 Project Name: Former St. Louis Ordnance Plant,
St. Louis, Missouri

FCN No.: 001
 Page: 1 of 1
 Date: 5/16/2008
 Revision No.: 0

ORIGINAL REQUIREMENTS:

In accordance with shallow monitoring well installation procedures detailed in the May 2008 Remedial Investigation Work Plan (Field Sampling Plan), the type of grout used for the annular seal will consist of high solids sodium bentonite slurry, at least 20 to 30 percent weight by solids. The grout will be mixed in accordance with manufacturer's instructions to achieve a density of at least 9.4 pounds per gallon. The grout density will be measured with a mud scale after each batch has been mixed to ensure the proper density has been achieved. The monitoring wells will be completed with flush-mount well protectors. The flush-mount well protector will consist of a watertight well vault equipped with a cast-iron lid and aluminum skirt.

FIELD CHANGE & DOCUMENTATION:

DOCUMENTED BY: Anthony Swierczek

During shallow monitoring well installation, it was noted that the drillers were not equipped with a mud scale to properly mix the high solids sodium bentonite slurry to specifications. Previous experience with these drillers has demonstrated that their standard mixture has achieved the minimum grout density required by manufacturers. The drillers were instructed to mix a thicker batch of grout slurry to be conservative and ensure that the density specification was met. As instructed the driller mixed and installed a thicker batch of grout that did not settle between the time it was placed and the well protector was installed at MW-116. A 4' x 4' concrete pad will be installed at MW-115 during the week of May 19, 2008.

During shallow monitoring well installation at MW-115, it was noted that thick vegetation and ground cover in the area may impede future groundwater sampling events at MW-115. To reduce the chance of thick vegetation obscuring the location of MW-115, CH2M HILL field staff and the Task Manager decided to install the monitoring well as an above ground completion. The completion consists of PVC casing extending approximately 3' above surface grade. A steel protective casing will be installed over the PVC casing and grouted at a depth 1' bgs. The well is located in an area with no vehicular traffic, so protective bollards will not be installed.

TECHNICAL JUSTIFICATION:

Previous experience with these drillers has demonstrated that their standard mixture has achieved the minimum grout density required by manufacturers. Monitoring well MW-115 was completed above ground due to thick vegetation and ground cover in the area.

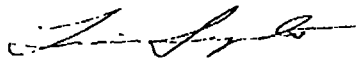
SUBMITTAL(S) REFERENCE NO.:

| | | | |
|------------------------|-----------------------|---------------------------------|---------------------------------|
| REASON FOR CHANGE | <u>X</u> Modification | <u> </u> Addition/Deletion | |
| WVN REQUIRED | <u>X</u> NO | <u> </u> YES | CHANGE ORDER NO.: <u>NA</u> |
| POP EXTENSION REQUIRED | <u>X</u> NO | <u> </u> YES | Additional Time (wk): <u>NA</u> |

APPLICABLE CONTRACT DOCUMENT(S):

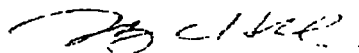
Remedial Investigation Work Plan, Field Sampling Plan

CONTRACTOR APPROVAL



Luis Sejido, PE
 Project Manager

05/23/08
 Date



Jeffrey Haber
 QCO

05/23/08
 Date

USACE APPROVAL

CONREP

Date

COR

Date

This direction, whether later determined to be fee bearing or not, shall not be considered authorization to exceed the current contract Estimated Cost under the Schedule. The Government is not obligated to reimburse the contractor for costs incurred in excess of the estimated costs specified in the schedule. The contractor is not obligated to continue performance under this contract including action under the Termination Clause of this contract, or otherwise incur costs in excess of the estimated cost specified in the schedule, until the Contracting Officer (I) notifies the contractor in writing that the estimated cost has been increased and (ii) provides a revised estimated total cost of performing this contract.

FIELD CHANGE NOTICE

Contract No.: **W912DQ-D-05-0002**
 Delivery Order No.: **0007**
 Project Name: **Former St. Louis Ordnance Plant,
 St. Louis, Missouri**

FCN No.: **002**
 Page: **1 of 1**
 Date: **5/21/2008**
 Revision No.: **0**

ORIGINAL REQUIREMENTS:

In accordance with soil and groundwater confirmation sampling procedures detailed in the May 2008 Remedial Investigation Work Plan (Field Sampling Plan), confirmation soil borings will be advanced using DPT methods at a subset of the MIP/CPT borings for the purposes of collecting soil and groundwater grab samples to confirm the MIP/CPT data and to assess discrete chemical concentrations in soil and groundwater. Soil borings advanced for the purposes of obtaining soil grab samples will be continuously sampled using a Geoprobe® Macro-Core® sampling device. Groundwater grab samples will be collected for cVOC analysis using a Geoprobe® Screen Point® groundwater sampling device driven by a DPT rig.

FIELD CHANGE & DOCUMENTATION:

DOCUMENTED BY: **Anthony Swierczek**

During grab groundwater sampling activities as part of the March 2008 vapor intrusion investigation at residences north of the site, the tight and expansive clays prevented the use of a Geoprobe® Screen Point® groundwater sampling device. In order to collect groundwater samples during confirmation sampling activities, hollow stem augers were used to advance each boring to pre-selected depths. A 1" PVC temporary piezometer equipped with a 5-foot prepacked screen was installed through the augers, completed with sand filter pack from the bottom of the boring to 2 feet above the screen, and a 4-foot thick bentonite seal. In cases where water was not visually encountered in the annular space at the depth of the bentonite seal, a high solids bentonite slurry was placed on top of the seal to prevent vertical migration of groundwater from above. A 4" ID continuous sampling tube system within the hollow stem augers was used to log soil and collect samples prior to installation of the temporary piezometers.

TECHNICAL JUSTIFICATION:

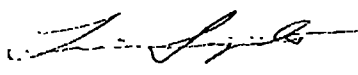
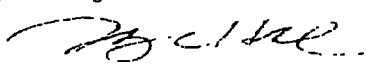
Due to the tight clays at the site, it was not feasible to collect groundwater confirmation samples using a screen point sampler driven to depth by a DPT rig. Soil borings were advanced utilizing hollow stem auger methods, the soil logged, and soil samples collected. Temporary piezometers were installed through the hollow stem augers to minimize risk of borehole swelling shut due to the expansive clays.

SUBMITTAL(S) REFERENCE NO.:

| | | | |
|------------------------|--|--|---------------------------------|
| REASON FOR CHANGE | <input checked="" type="checkbox"/> Modification | <input type="checkbox"/> Addition/Deletion | |
| WVN REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | CHANGE ORDER NO.: NA |
| POP EXTENSION REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | Additional Time (wk): NA |

APPLICABLE CONTRACT DOCUMENT(S):

Remedial Investigation Work Plan, Field Sampling Plan

| CONTRACTOR APPROVAL | | USACE APPROVAL | |
|---|------------------|---|---------------|
|  Luis Sejido, PE Project Manager | 05/23/08 Date | CONREP | _____ Date |
|  Jeffrey Haberl QCO | 05/23/08 Date | COR | _____ Date |
| | | This direction, whether later determined to be fee bearing or not, shall not be considered authorization to exceed the current contract Estimated Cost under the Schedule. The Government is not obligated to reimburse the contractor for costs incurred in excess of the estimated costs specified in the schedule. The contractor is not obligated to continue performance under this contract including action under the Termination Clause of this contract, or otherwise incur costs in excess of the estimated cost specified in the schedule, until the Contracting Officer (I) notifies the contractor in writing that the estimated cost has been increased and (ii) provides a revised estimated total cost of performing this contract. | |

FIELD CHANGE NOTICE

Contract No.: W912DQ05-D-0002

FCN No.: 003

Delivery Order No.: 007

Page: 1 of 1

Project Name: St. Louis Ordnance Plant, Former Hanley Area
Remedial Investigation

Date: 5/20/2008

Revision No.: 0

ORIGINAL REQUIREMENTS:

The sub-contracted air laboratory, Applied Sciences Laboratory (ASL) of Corvallis, OR, to provide analytical services and individually-certified sampling equipment (Summa canisters and flow controllers) for indoor and ambient air samples.

FIELD CHANGE & DOCUMENTATION:

DOCUMENTED BY: Dave Lee

ASL notified the Project Chemist that the air laboratory was having a systematic problem with blank contamination. ASL was making every attempt to determine the root cause. However, ASL was concerned that they would not be able to certify air canisters in a timely manner and the schedule would be impacted. ASL recommended an alternate laboratory, Columbia Analytical Services (CAS) of Simi Valley, CA. This change in laboratories was implemented.

TECHNICAL JUSTIFICATION:

CAS is technically capable of performing the required analyses and can provide the individually-certified equipment in a timely manner and ensure that the schedule will not be impacted. CAS will be maintained as the contract laboratory for all future indoor air sampling.

SUBMITTAL(S) REFERENCE NO.:

| | | | |
|------------------------|--|--|---------------------------------|
| REASON FOR CHANGE | <input checked="" type="checkbox"/> Modification | <input type="checkbox"/> Addition/Deletion | |
| WVN REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | CHANGE ORDER NO.: <u>NA</u> |
| POP EXTENSION REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | Additional Time (wk): <u>NA</u> |

APPLICABLE CONTRACT DOCUMENT(S):

Quality Assurance Project Plan

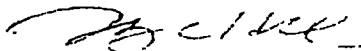
CONTRACTOR APPROVAL



05/23/08

Date

Luis Seijido, PE
Project Manager



05/23/08

Date

Jeffrey Haberl
QCO

USACE APPROVAL

CONREP

Date

COR

Date

This direction, whether later determined to be fee bearing or not, shall not be considered authorization to exceed the current contract Estimated Cost under the Schedule. The Government is not obligated to reimburse the contractor for costs incurred in excess of the estimated costs specified in the schedule. The contractor is not obligated to continue performance under this contract including action under the Termination Clause of this contract, or otherwise incur costs in excess of the estimated cost specified in the schedule, until the Contracting Officer (I) notifies the contractor in writing that the estimated cost has been increased and (ii) provides a revised estimated total cost of performing this contract.

FIELD CHANGE NOTICE

Contract No.: W912DQ-D-05-0002
 Delivery Order No.: 0007
 Project Name: Former St. Louis Ordnance Plant,
St. Louis, Missouri

FCN No.: 4
 Page: 1 of 1
 Date: 6/11/2008
 Revision No.: 0

ORIGINAL REQUIREMENTS:

In accordance with groundwater monitoring well installation procedures detailed in the May 2008 Remedial Investigation Work Plan (Field Sampling Plan), all monitoring wells will be completed with a properly sized and graded, thoroughly washed, sound, durable, well-rounded siliceous sand filter pack. A bentonite seal will be installed atop the sand filter pack. A minimum of 1 hour will elapse between installing the bentonite seal and completing the remaining annular space. The type of grout used for the annular seal will consist of high solids sodium bentonite slurry, at least 20 to 30 percent weight by solids.

In addition, the steel isolation casing at the deep monitoring well will be installed 5 feet into competent bedrock and set in place with cement grout. The grout will be allowed to cure for no less than 48 hours prior to installation of the monitoring well.

FIELD CHANGE & DOCUMENTATION:

DOCUMENTED BY:

Anthony Swierczek

The annular space above the bentonite seal at shallow monitoring wells MW-115 and MW-116 were completed with cement-bentonite grout. The completion details for each well are as follows: **MW-115:** Screen from 43-33' bgs, Riser from 33' bgs to 2 68' above ground surface, Sand Filter Pack from 44 4-31' bgs, Hydrated Bentonite from 31-29' bgs, Cement-Bentonite Grout from 29' bgs to ground surface. **MW-116:** Screen from 28-18' bgs, Riser from 18' bgs to ground surface, Hydrated Bentonite from 35-30' bgs, Sand Filter Pack from 30-16' bgs, Hydrated Bentonite from 16-14' bgs, Cement-Bentonite Grout from 14' bgs to ground surface.

The steel casing at deep monitoring well MW-117 was set at 44' bgs. Prior to placement of the steel casing, cement grout was tremmied from 44-41' bgs and allowed to set for approximately one hour. The steel casing was then inserted into the borehole at the termination depth (44') and the annular space grouted with cement grout from the bottom to ground surface. Cement grout was also placed within the casing from the base of the casing to 23 75' bgs. During the curing process, it was noted that water was recharging into the casing. It was subsequently decided to pump the water from the casing and fill the remainder of the casing with cement grout. The initial volume of grout within the casing (44-23 75' bgs) was allowed to set for approximately 8 days prior to installation of the deep monitoring well. The volume of grout introduced into the casing from 23 75' bgs to ground surface was allowed to set for approximately 44 hours prior to well installation. The deep monitoring well was completed in accordance with the Work Plan (Field Sampling Plan).

TECHNICAL JUSTIFICATION:

Cement-bentonite was used during shallow monitoring well completion as it is the preferred annular seal by USACE standards. Hydrated bentonite was not used as the seal between the sand filter pack and the annular seal during deep monitoring well installation. As a high solids sodium bentonite slurry was used as the annular seal at the deep monitoring well, a hydrated bentonite seal was not necessary.

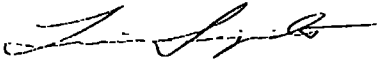
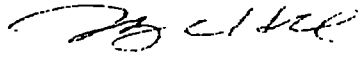
SUBMITTAL(S) REFERENCE NO.:

| REASON FOR CHANGE | <input checked="" type="checkbox"/> Modification | <input type="checkbox"/> Addition/Deletion | |
|------------------------|--|--|---------------------------------|
| WVN REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | CHANGE ORDER NO.: <u>NA</u> |
| POP EXTENSION REQUIRED | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> YES | Additional Time (wk): <u>NA</u> |

APPLICABLE CONTRACT DOCUMENT(S):

Remedial Investigation Work Plan, Field Sampling Plan

CONTRACTOR APPROVAL

| | |
|---|----------|
|  | 06/11/08 |
| Luis Seijido, PE Project Manager | Date |
|  | 06/11/08 |
| Jeffrey Haberl QCO | Date |

USACE APPROVAL

CONREP

Date

COR

Date

This direction, whether later determined to be fee bearing or not, shall not be considered authorization to exceed the current contract Estimated Cost under the Schedule. The Government is not obligated to reimburse the contractor for costs incurred in excess of the estimated costs specified in the schedule. The contractor is not obligated to continue performance under this contract including action under the Termination Clause of this contract, or otherwise incur costs in excess of the estimated cost specified in the schedule, until the Contracting Officer (I) notifies the contractor in writing that the estimated cost has been increased and (ii) provides a revised estimated total cost of performing this contract.

Quality Control Documentation

PREPARATORY PHASE CHECKLIST

Contract No: W912D05-D-0002 Delivery Order 0007

Date: 05/01/08

Definable Feature(s):

1. Implement the Work Plan for the Remedial Investigation

Government Rep Notified: _____ Hours in Advance Yes X No _____

I. Personnel Present

| Name | Position | Company/Government |
|---------------------------|----------------------------|--------------------|
| Dan Price | Task Manager | CH2M HILL |
| Chris English | Project Manager | CH2M HILL |
| Jim Meier | Senior Consultant | CH2M HILL |
| Tiffany Swoveland Chapman | Technical Specialist | CH2M HILL |
| Barrie Selcoe | Human Health Risk Assessor | CH2M HILL |
| Dave Lee | Project Chemist | CH2M HILL |
| Tony Swierczek | Field Team Lead | CH2M HILL |
| Glynn Roberts | Field Team Member | CH2M HILL |
| Wayne Conway | Field Team Member | CH2M HILL |
| Jeff Haberl | QA/QC Oversight | CH2M HILL |

(List additional personnel on reverse side)

II. Submittals

1. Review submittals and/or submittal log. Have all submittals been approved? Yes X No _____

2. Are all materials and submittals on hand and available? Yes X No _____

3. Check approved submittals against delivered material (This should be done as material arrives).

Not applicable

III. Material Storage

Are materials/equipment stored properly? Yes X No _____

Material storage evaluated upon implementation of field activities.

IV Specifications

Preparatory phase meeting covered aspects of the RI Work Plan including overview of the project, project team member roles and responsibilities, stakeholder information, project communications, critical success factors, and the RI scope of work. The scope of work predominantly covered the investigation approach. The project team members

openly discussed questions pertaining to the scope of work to ensure logistics were properly taken care of prior to mobilizing to the site.

V. Preliminary Work and Permits

Utility clearance conducted. Field team lead has met with utility locate personnel.

Stakeholders and property owners affected by RI field activities notified of start date.

Property access agreement to work on JobCorps property still pending.

VI. Inspection and Testing

1. Have all tests identified in the Work Plan been identified? Note test and inspection to be performed, frequency and by whom.

Not applicable

VII. Safety

1. Safety tailgate meeting held prior to start of work? Yes X No
2. Activity Hazard Analysis approved? Yes X No

VIII. U.S. Corps of Engineers comments during meeting.

USACE representative not present at the time of the preparatory phase meeting.

Jeffrey C. Haberl
CH2M HILL Representative

INITIAL PHASE CHECKLIST

Contract No.: W912DQ-DQ-05-D-0002, Task Order 0007

Date: 5/14/08

Definable Feature(s):

1. Hand auger borings to collect surface soil samples for metals analysis

Work Plan Objective: Advance hand auger borings to 2 feet bgs at up to 32 locations in the areas of Buildings 219B, C, E, and F; along the south property boundary in the areas of former Buildings 228B, 228G, and 228Z; and near former Building 220. Surface soil samples will be submitted for lead, arsenic, or TCLP RCRA metal analysis, depending on the boring location, as specified in the Work Plan. Lead and arsenic samples to be run on a 24-hour turn around time.

The work was evaluated against the Work Plan to ensure procedures were followed. The following is a general summary of specific aspects focused on while observing activities:

- A) Using a hand auger, advance soil borings to 2 feet bgs or refusal, whichever is encountered first.
- B) Document soil lithology
- C) Place soil in a clean stainless steel bowl
- D) Remove material such as concrete and asphalt from soil
- E) Homogenize soil
- F) Place sample in laboratory-supplied sample containers and label
- G) Decontaminate non-disposable equipment

Government Rep Notified: _____ Hours in Advance Yes ☒ No ☐

I. Personnel Present

| | Name | Position | Company/Government |
|----|---------------|-----------------|--------------------|
| 1. | Glynn Roberts | Field Geologist | CH2M HILL |
| 2. | Wayne Conway | Field Geologist | CH2M HILL |
| 3. | Jeff Haberl | QCO | CH2M HILL |
| 4. | | | |
| 5. | | | |

II. Identify full compliance with procedure identified at preparatory.

Comments: The following summarizes the status of the compliance with the project specifications for Each Definable Feature of Work at the time of the Initial Inspections.

Work was conducted in accordance with the Work Plan and Field Sampling Plan. In one instance a hand auger boring could not be advanced to 2 feet bgs because refusal was encountered on concrete. The sample was collected from surface to a depth of approximately 3" below grade.

Comments: The following summarizes the status of the condition of each Definable Feature of Work at the time of the Initial Inspection:

[illegible]

1. Where is work located?
SLOP Former Hanley Area

Yes _____ No X

Jeff Haberl
CH2M HILL Representative

INITIAL PHASE CHECKLIST

Contract No.: W912DQ-DQ-05-D-0002, Task Order 0007

Date: 5/14/08

Definable Feature(s):

1. MIP/CPT boring advancement and data collection

Work Plan Objective: Advance up to 26 MIP/CPT borings on the northern end of the site to better assess the lateral extent and vertical distribution of cVOC contamination in the dissolved-phase plume and subsurface soil as defined by previous wells and direct push borings and to assess the presence of DNAPL near soil boring SB-23 and well MW-111.

The work was evaluated against the Work Plan to ensure procedures were followed. The following is a general summary of specific aspects focused on while observing activities:

- A) Set up and calibrate equipment in accordance with MIP/CPT standards (as appended in the Field Sampling Plan). Ensure equipment is set up in a manner such that damage to trunk line or cables will not occur.
- B) Advance MIP/CPT probe to refusal or competent bedrock, whichever is encountered first, in accordance with MIP/CPT practices and standards.
- C) Observe MIP/CPT output data for potential responses or anomalies.
- D) Decontaminate MIP/CPT rods as they are retracted from the soil boring.
- E) Obtain a hard copy of the MIP/CPT logs. Ensure the logs are correct and scaled properly as observed during advancement of the probes.
- F) Ensure equipment is properly stowed to minimize damage between boring locations.
- G) Abandon boring in accordance with state regulatory requirements.

Government Rep Notified: _____ Hours in Advance Yes ☒ No ☐

I. Personnel Present

| | Name | Position | Company/Government |
|----|----------------|-----------------|--------------------|
| 1. | Tony Swierczek | Field Team Lead | CH2M HILL |
| 2. | Jeff Haberl | QCO | CH2M HILL |
| 3. | Thomas Jones | MIP Operator | Precision |
| 4. | Ray | MIP Technician | Precision |
| 5. | Theron | MIP Technician | Precision |

II. Identify full compliance with procedure identified at preparatory.

Comments: The following summarizes the status of the compliance with the project specifications for Each Definable Feature of Work at the time of the Initial Inspections.

Work was conducted in accordance with the Work Plan and Field Sampling Plan.

III. Preliminary Work. Ensure preliminary work is complete and correct. If not, what action is taken?

Comments: The following summarizes the status of the condition of each Definable Feature of Work at the time of the Initial Inspection:

Work was conducted in accordance with the Work Plan and Field Sampling Plan. QCO was onsite as first MIP/CPT boring was advanced. Calibration tests had been conducted and documented by the field team leader.

IV. Establish Level of Workmanship.

1. Where is work located?
SLOP Former Hanley Area

2. Is a sample panel required: Yes _____ No X

V. Resolve any differences.

No differences observed.

VI. Check Safety.

Review job conditions using EM 385-1-1 and job hazard analysis.

Comments:

Activities conducted in accordance with the health and safety plan.

Jeff Haberl
CH2M HILL Representative

INITIAL PHASE CHECKLIST

Contract No.: W912DQ-DQ-05-D-0002, Task Order 0007

Date: 5/21/08

Definable Feature(s):

1. Confirmation soil and groundwater sample collection

Work Plan Objective: Collect soil and groundwater confirmation samples for cVOC analysis from a select number of soil borings to confirm ECD responses during the MIP survey. Also collect geotechnical samples from a subset of the confirmation soil borings. The location of the borings and sample depth intervals will be determined following completion of the MIP survey.

The work was evaluated against the Work Plan to ensure procedures conducted to successfully complete the definable feature were followed. Due to the number of steps involved with these procedures, a general summary has not been provided in this checklist.

Government Rep Notified: _____ Hours in Advance Yes ☒ No ☐

I. Personnel Present

| | Name | Position | Company/Government |
|----|----------------|-----------------|--------------------|
| 1. | Glynn Roberts | Field Geologist | CH2M HILL |
| 2. | Tony Swierczek | Field Team Lead | CH2M HILL |
| 3. | Jeff Haberl | QCO | CH2M HILL |
| 4. | | | |
| 5. | | | |

II. Identify full compliance with procedure identified at preparatory.

Comments: The following summarizes the status of the compliance with the project specifications for Each Definable Feature of Work at the time of the Initial Inspections.

The project team met prior to performing the soil and groundwater confirmation sampling to determine the soil boring locations, sample intervals, and drilling/temporary piezometer installation methods to successfully collect samples. Work conducted in field was performed in accordance with the directives of this meeting. Some soil boring locations required offsets due to the close proximity to overhead high-voltage lines. Field change notices were produced and submitted to USACE because the drilling and temporary piezometer construction methods were changed from the Work Plan (hollow-stem auger w/ 4" continuous core barrel sampler used instead of direct-push technology methods, temporary pre-pack piezometers installed rather than using a screen point sampling device). These changes were made because of the geologic and hydrogeologic conditions. Field screening and sampling methods were conducted in accordance with the Field Sampling Plan.

III. Preliminary Work. Ensure preliminary work is complete and correct. If not, what action is taken?

Comments: The following summarizes the status of the condition of each Definable Feature of Work at the time of the Initial Inspection:

Work was conducted in accordance with the Work Plan documents. QCO worked with the field team to determine the best way to prevent potentially shallow water from potentially migrating down the borehole and influencing groundwater sampled from the targeted zone. Sand filter pack was constructed around the pre-pack well screen and a bentonite seal was constructed atop the sand filter pack. Instruction was given that any water added to hydrate the bentonite seal was to be purged from the temporary piezometer prior to sampling. Due to the temporary nature of the piezometer, the remainder of the annular space above the seal remained open.

IV. Establish Level of Workmanship.

1. Where is work located?
SLOP Former Hanley Area

2. Is a sample panel required: Yes _____ No X

V. Resolve any differences.

None observed.

VI. Check Safety.

Review job conditions using EM 385-1-1 and job hazard analysis.

Comments:

Activities conducted in accordance with the health and safety plan. Field team cognizant of underground and above-ground utilities.

Jeff Haberl
CH2M HILL Representative

INITIAL PHASE CHECKLIST

Contract No.: W912DQ-DQ-05-D-0002, Task Order 0007

Date: 5/16/08

Definable Feature(s):

1. Shallow monitoring well installation

Work Plan Objective: Install two shallow groundwater monitoring wells to supplement the existing monitoring well network in the area of former Building 220 at the north end of the site.

The work was evaluated against the Work Plan to ensure procedures were followed. The following is a general summary of specific aspects focused on while observing activities:

- A) Install monitoring wells using hollow stem auger techniques.
- B) Continuously collect soil cores from the borehole and log/screen in accordance with the Work Plan and Field Sampling Plan.
- C) Well screen and riser to be constructed of 2-inch diameter, factory manufactured, flush-jointed and threaded, Schedule 40 PVC riser and screen (0.01 inch slot size). Well screen will be 10 feet long.
- D) Annular space around well screen will be completed with properly sized and graded siliceous sand. Sand will extend to at least 2 feet above the top of the well screen. Depth of sand will be measured during placement.
- E) Bentonite seal comprised of granular bentonite at least 2 feet thick will be completed above the sand pack. Seal will be allowed to cure for at least 1 hour before completing remainder of monitoring well. Depth to the top of the seal will be measured after the 1 hour time period has elapsed.
- F) Remainder of annular space to be completed with high solids sodium bentonite slurry, at least 20 to 30 percent weight by solids. The grout will be tremied in place using a side-discharge tremie pipe. The grout density will be measured with a mud scale after each batch to achieve a minimum density of 9.4 pounds per gallon.
- G) Monitoring wells will be completed with flush-mount well protectors constructed in a 4 foot by 4 foot concrete pad.
- H) Augers and downhole tooling will be decontaminated between monitoring well locations.

Government Rep Notified: _____ Hours in Advance Yes ☒ No ☐

I. Personnel Present

| | Name | Position | Company/Government |
|----|-------------------|-----------------|--------------------|
| 1. | Glynn Roberts | Field Geologist | CH2M HILL |
| 2. | Wayne Conway | Field Geologist | CH2M HILL |
| 3. | Jeff Haberl | QCO | CH2M HILL |
| 4. | Adam Matzenbacher | Driller | MRK Environmental |
| 5. | Adam Shields | Driller Helper | MRK Environmental |

II. Identify full compliance with procedure identified at preparatory.

Comments: The following summarizes the status of the compliance with the project specifications for Each Definable Feature of Work at the time of the Initial Inspections.

Borehole advanced, logged, and screened in accordance with Work Plan and Field Sampling Plan.
Monitoring well was installed in general accordance with the submittals. Drillers did not have material and tooling available to tremie in bentonite slurry. See Section V for resolution of this problem

Because the borehole was advanced through concrete in an alley, a 4 foot by 4 foot concrete pad was not constructed. Rather, a circular pad was completed. The diameter of the pad is sufficiently larger than the flush mount well vault in accordance with state well construction standards.

III. Preliminary Work. Ensure preliminary work is complete and correct. If not, what action is taken?

Comments: The following summarizes the status of the condition of each Definable Feature of Work at the time of the Initial Inspection:

QCO observed advancement of the monitoring well to total depth. QCO was unable to be onsite during actual installation of the monitoring well. The QCO interviewed the field team the day after well installation to confirm construction was in accordance with the Work Plan and Field Sampling Plan. QCO was onsite during discussion and resolution of the problem where the drillers did not have material and equipment to tremie grout in place (See Section V).

IV. Establish Level of Workmanship.

1. Where is work located?
6317 Stratford Avenue

2. Is a sample panel required: Yes _____ No ☒ X

V. Resolve any differences.

Field team stopped the monitoring well installation activities after achieving total borehole depth until the drillers obtained materials and equipment to tremie bentonite slurry. A grout scale was not available. Previous experience with these drillers has demonstrated that their standard mixture has achieved the minimum grout density required by manufacturers. Drillers mixed a thicker batch of slurry to be conservative. The grout did not settle between the time it was placed and the well protector was installed (72 hours). A field change notice will be prepared documenting the non-use of a grout scale.

VI. Check Safety.

Review job conditions using EM 385-1-1 and job hazard analysis

Comments:

Activities conducted in accordance with the health and safety plan.

Jeff Haberl
CH2M HILL Representative

INITIAL PHASE CHECKLIST

Contract No.: W912DQ-DQ-05-D-0002, Task Order 0007

Date: 5/29/08

Definable Feature(s):

1. Shallow monitoring well development

Work Plan Objective: Develop monitoring wells no sooner than 48 hours after installation.

The work was evaluated against the Work Plan to ensure procedures were followed. The following is a general summary of specific aspects focused on while observing activities:

- A) Measure the depth to groundwater and total well depth prior to developing
- B) Ensure all downhole equipment is clean and in working order before deploying in well
- C) Surge the entire length of the well screen with a surge block
- D) Purge five times the well volume (including sand filter pack) from well using a submersible high-flow pump
- E) Monitor groundwater quality parameters including pH, specific conductivity, temperature, and turbidity
- F) Continue developing until the required well volume is removed and the well water parameters have stabilized according to the following conditions:

a) The temperature, pH, and specific conductivity have stabilized to ± 1 degree Celsius ($^{\circ}\text{C}$), ± 0.1 pH units, and ± 5 percent milliSiemens per centimeter, respectively, over three consecutive readings (10-minute interval readings) at a pumping rate no less than the pumping rate used for sampling (approximately 0.5 liter per minute).

b) The turbidity remains within a 10 NTU range below 25 NTUs for at least 30 minutes, and other parameters have stabilized to above criteria.

c) If, after 3 hours of purging, the turbidity is below 25 NTUs, but has not stabilized within the 10 NTU range, and other parameters have stabilized to the above criteria, then the well will be considered developed.

d) A well is considered developed if it purged dry.

- G) Decontaminate field equipment

Government Rep Notified: _____ Hours in Advance Yes ☒ No ☐

I. Personnel Present

| | Name | Position | Company/Government |
|----|----------------|-----------------|--------------------|
| 1. | Glynn Roberts | Field Geologist | CH2M HILL |
| 2. | Tony Swierczek | Field Team Lead | CH2M HILL |
| 3. | Jeff Haberl | QCO | CH2M HILL |
| 4. | Joey Brown | Driller | MRK Environmental |
| 5. | | | |

II. Identify full compliance with procedure identified at preparatory.

Comments: The following summarizes the status of the compliance with the project specifications for Each Definable Feature of Work at the time of the Initial Inspections.

Work completed in accordance with the preparatory phase meetings and Work Plan documents.

III. Preliminary Work. Ensure preliminary work is complete and correct. If not, what action is taken?

Comments: The following summarizes the status of the condition of each Definable Feature of Work at the time of the Initial Inspection:

Preliminary work conducted in accordance with the Work Plan documents. The monitoring well developed during the QC inspection was purged dry before parameters stabilized. Therefore, the well is considered developed. Some groundwater was allowed to recharge and the well purged dry two additional times to verify that the sand filter pack was adequately filtering fines from groundwater recharging into the well. The turbidity of the water decreased each time the groundwater was allowed to recharge the well purged dry indicating that the sand filter pack had been properly developed.

IV. Establish Level of Workmanship.

1. Where is work located?
6317 Stratford Avenue

2. Is a sample panel required: Yes _____ No X

V. Resolve any differences.

None

VI. Check Safety.

Review job conditions using EM 385-1-1 and job hazard analysis.

Comments:

Activities conducted in accordance with the health and safety plan.

Jeff Haberl
CH2M HILL Representative

FOLLOW-UP PHASE CHECKLIST

Contract No.: W912DQ-05-D-0002, T.O. 0007

Date: 5/16/08

I. Definable Feature(s):

1. MIP/CPT boring advancement and data collection

II. Personnel Present:

| | <u>Name</u> | <u>Position</u> | <u>Company/Government</u> |
|---|----------------|-----------------|---------------------------|
| 1 | Tony Swierczek | Field Team Lead | CH2M HILL |
| 2 | Jeff Haberl | QCO | CH2M HILL |
| 3 | Thomas Jones | MIP Operator | Precision |
| 4 | Ray | MIP Technician | Precision |
| 5 | Theron | MIP Technician | Precision |

III. Identify compliance with procedure identified at preparatory and initial control phases:

Comments: Procedures compliant with those conducted at the time of preparatory and initial control phase inspections. Subcontractor was diligent in diagnosing and fixing any equipment problems in the field without potentially sacrificing data quality.

IV. Verification of Level of Workmanship:

- 1) Where is work located? SLOP Former Hanley Area
- 2) Is work consistent with initial control phase? Yes

V. Document Differences Identified (if any) and Describe Resolution:

Comments: None

VI. Check Safety:

Safety protocol followed.

VII. Follow-Up Inspection Performed By:

Jeff Haberl
CH2M HILL Quality Control Officer

FOLLOW-UP PHASE CHECKLIST

Contract No.: W912DQ-05-D-0002, T.O. 0007

Date: 5/24/08

I. Definable Feature(s):

1. Indoor Air Sampling

II. Personnel Present:

| | <u>Name</u> | <u>Position</u> | <u>Company/Government</u> |
|---|-----------------------|-------------------|---------------------------|
| 1 | Glynn Roberts | Field Team Leader | CH2M HILL |
| 2 | Jeff Haberl | QCO | CH2M HILL |
| 3 | Dan Price | Task Manager | CH2M HILL |
| 4 | Josephine Newton-Lund | Project Manager | USACE - KC District |
| 5 | Mr. Petty | Homeowner | -- |
| 6 | Julie Jennings | USEPA Oversight | Chamberlin Group |

III. Identify compliance with procedure identified at preparatory and initial control phases:

Comments: Procedures compliant with those conducted at the time of preparatory and initial control phase inspections. Two Summa canisters were set in the basement of the house. One was placed at the northeast corner, and the second was placed on the southwest corner. A field duplicate was also placed at the southwest corner. One ambient air canister was set on the north side of the house under the back porch, out of view from passers by. These locations are the same as those sampled during the Vapor Intrusion work. The project team verified with Mr. Petty that conditions or chemical use in the house has not changed since the last sampling event. The field team lead checked the canister pressures prior to connecting the flow controllers. The flow controllers are set for a 24-hour sample time

IV. Verification of Level of Workmanship:

- 1) Where is work located? 6317 Stratford Avenue
2) Is work consistent with initial control phase? Yes

V. Document Differences Identified (if any) and Describe Resolution:

Comments: None

VI. Check Safety:

Safety protocol followed.

VII. Follow-Up Inspection Performed By:

Jeff Haberl
CH2M HILL Quality Control Officer

Data Quality Evaluation Report

**St. Louis Ordnance Plant
Former Hanley Area
St. Louis, Missouri**

Submitted to

**U.S. Army Corps of Engineers
Kansas City District**

November 2008

CH2MHILL

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1 Acronyms and Abbreviations

| | | |
|----|--------|--|
| 2 | DQE | data quality evaluation |
| 3 | EB | equipment rinsate blank |
| 4 | FD | field duplicate |
| 5 | LCS | laboratory control sample |
| 6 | MS/MSD | matrix spike/matrix spike duplicate |
| 7 | N | normal sample |
| 8 | PARCC | precision, accuracy, representativeness, completeness, comparability |
| 9 | QA | quality assurance |
| 10 | QAPP | quality assurance project plan |
| 11 | QC | quality control |
| 12 | RPD | relative percent difference |
| 13 | SDG | sample delivery group |
| 14 | TB | trip blank |
| 15 | | |

1 Introduction

2 This Data Quality Evaluation (DQE) report assesses the quality of analytical results for
3 samples collected during the remedial investigation at the former Hanley Area, St. Louis
4 Ordnance Plant located in St. Louis, Missouri. Soil, groundwater, and air samples were
5 collected from March 18 to June 12, 2008 and analyzed in support of a remedial
6 investigation at the site. Individual method requirements and guidelines from the *Final*
7 *Quality Assurance Project Plan, St. Louis Ordnance Plant, former Hanley Area, St. Louis, Missouri*
8 (QAPP) (CH2M HILL 2007) were used as the basis for this assessment.

9 Analytical Approach

10 The sampling and analysis objective was to characterize the extent of contamination in
11 surface soil, subsurface soil, and groundwater at the former Hanley Area.

12 Analytical Data

13 The DQE includes 34 normal (N) soil samples, 6 soil field duplicates (FD), 22 N water
14 samples, 4 water FD, 6 N air samples, and 2 air FD. A list of samples, collection dates, and
15 associated sample delivery groups (SDG) is provided in Table 1. The soil and water analyses
16 were performed by PEL of Tampa, Florida. The air analyses were performed by Applied
17 Sciences Laboratory (ASL) of Corvallis, Oregon and Columbia Analytical Services (CAS) of
18 Simi Valley, California.

19 Fourteen methods were used to analyze the environmental samples. Samples were collected
20 and shipped by overnight carrier to the laboratory for analysis. Selected samples were
21 analyzed for the methods listed in Table 2.

TABLE 1

Summary of Samples

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Sample ID | QAQC Type | Sample Date | SDG |
|--------|-----------------------------|-----------|-------------|----------|
| Air | SLOP-6317-AA-N | N | 3/18/2008 | H1543 |
| Air | SLOP-6317-AA-N_20080529 | N | 5/29/2008 | P0801616 |
| Air | SLOP-6317-IA-NE | N | 3/18/2008 | H1543 |
| Air | SLOP-6317-IA-NE_20080529 | N | 5/29/2008 | P0801629 |
| Air | SLOP-6317-IA-SW | N | 3/18/2008 | H1543 |
| Air | SLOP-6317-IA-SW_20080529 | N | 5/29/2008 | P0801629 |
| Air | SLOP-6317-IA-SW-FD | FD | 3/18/2008 | H1543 |
| Air | SLOP-6317-IA-SW-FD_20080529 | FD | 5/29/2008 | P0801629 |
| Soil | CB-01-S-30 | N | 5/21/2008 | 2509330 |
| Soil | CB-02-S-30 | N | 5/21/2008 | 2509330 |

TABLE 1**Summary of Samples***Former Hanley Area Remedial Investigation Report, St Louis Ordnance Plant, St Louis, Missouri*

| Matrix | Sample ID | QAQC Type | Sample Date | SDG |
|---------------|------------------|------------------|--------------------|------------|
| Soil | CB-03-S-8 | N | 5/22/2008 | 2509349 |
| Soil | CB-04-S-19 | N | 5/22/2008 | 2509349 |
| Soil | CB-06-S-21.5 | N | 5/23/2008 | 2509356 |
| Soil | CB-07-S-2 | N | 5/29/2008 | 2509399 |
| Soil | FD-051408B | FD | 5/14/2008 | 2509265 |
| Soil | FD-051408C | FD | 5/14/2008 | 2509267 |
| Soil | FD-052108A | FD | 5/21/2008 | 2509330 |
| Soil | FD-S-051308A | FD | 5/13/2008 | 2509258 |
| Soil | FD-S-051308B | FD | 5/13/2008 | 2509258 |
| Soil | FD-S-051408 | FD | 5/14/2008 | 2509267 |
| Soil | HA-01-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-02-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-03-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-04-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-05-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-05-S-00 | N | 5/13/2008 | 2509685 |
| Soil | HA-06-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-06-S-00 | N | 5/13/2008 | 2509685 |
| Soil | HA-07-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-08-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-09-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-10-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-11-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-11-S-00 | N | 5/13/2008 | 2509685 |
| Soil | HA-12-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-13-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-13-S-00 | N | 5/13/2008 | 2509685 |
| Soil | HA-14-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-15-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-15-S-00 | N | 5/13/2008 | 2509685 |
| Soil | HA-16-S-00 | N | 5/13/2008 | 2509258 |
| Soil | HA-17-S-00 | N | 5/14/2008 | 2509267 |
| Soil | HA-18-S-00 | N | 5/14/2008 | 2509267 |

TABLE 1

Summary of Samples

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Sample ID | QAQC Type | Sample Date | SDG |
|--------|-------------------|-----------|-------------|---------|
| Soil | HA-19-S-00 | N | 5/14/2008 | 2509267 |
| Soil | HA-20-S-00 | N | 5/14/2008 | 2509265 |
| Soil | HA-21-S-00 | N | 5/14/2008 | 2509265 |
| Soil | HA-22-S-00 | N | 5/14/2008 | 2509267 |
| Soil | SLOPUI-033108 | N | 3/31/2008 | 2508946 |
| Water | CB-01-W-30 | N | 5/22/2008 | 2509349 |
| Water | CB-02-W-30 | N | 5/22/2008 | 2509349 |
| Water | CB-04-W-27.5 | N | 5/23/2008 | 2509356 |
| Water | CB-06-W-20.5 | N | 5/23/2008 | 2509356 |
| Water | Disposal - 1 | N | 6/6/2008 | 2509461 |
| Water | Disposal - 2 | N | 6/6/2008 | 2509461 |
| Water | FD-W-060408A | FD | 6/4/2008 | 2509443 |
| Water | FD-W-060508A | FD | 6/5/2008 | 2509451 |
| Water | FD-W-060508B | FD | 6/5/2008 | 2509451 |
| Water | MW-106-W-00 | N | 6/3/2008 | 2509443 |
| Water | MW-107-W-00 | N | 6/5/2008 | 2509451 |
| Water | MW-108-W-00 | N | 6/4/2008 | 2509443 |
| Water | MW-109-W-00 | N | 6/4/2008 | 2509443 |
| Water | MW-110-W-00 | N | 6/5/2008 | 2509451 |
| Water | MW-111-W-00 | N | 6/6/2008 | 2509461 |
| Water | MW-112-W-00 | N | 6/5/2008 | 2509451 |
| Water | MW-113-W-00 | N | 6/4/2008 | 2509443 |
| Water | MW-114-W | N | 6/3/2008 | 2509443 |
| Water | MW-115-W-00 | N | 6/5/2008 | 2509451 |
| Water | MW-116-W-00 | N | 6/4/2008 | 2509443 |
| Water | MW-117-W-00 | N | 6/12/2008 | 2509538 |
| Water | SLOP-4701-5-22 | N | 3/31/2008 | 2508946 |
| Water | SLOP-6317-5-25 | N | 3/31/2008 | 2508946 |
| Water | SLOP-6321-5-24 | N | 3/31/2008 | 2508946 |
| Water | SLOP-6321-5-24-FD | FD | 3/31/2008 | 2508946 |
| Water | SLOPVI-033108 | N | 3/31/2008 | 2508946 |

TABLE 2

Summary of Analytical Methods

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Parameter | Method |
|---------------------------|--------------|
| Methane, Ethane, Ethylene | RSK-175 |
| Total Solids | SM2540B |
| Total Suspended Solids | SM2540D |
| Volatile Suspended Solids | SM2540E |
| Chemical Oxygen Demand | SM5220C |
| Anions | E300.1 |
| TCLP Metals | SW6010B-TCLP |
| TCLP Mercury | SW7470A-TCLP |
| Air Volatiles | TO15 SIM |
| Metals | SW6010B |
| Mercury | SW7470A |
| pH | E150.1 |
| SVOC | SW8270C |
| VOC | SW8260B |

Data review and verification were performed in accordance with the QAPP.

One hundred percent of the data underwent review and verification that included the following:

- A review of the SDG narrative to identify issues that the laboratory reported in the data deliverable.
- A check of sample integrity (sample collection, chain of custody, preservation, and holding times).
- An evaluation of basic quality control (QC) measurements used to assess the accuracy, precision, and representativeness of data including QC blanks, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), matrix spikes/matrix spike duplicates (MS/MSD), surrogate recovery when applicable, and field or laboratory duplicate results.
- An evaluation of calibration and QC summary results against the project requirements.
- A review of sample results, target compound lists, and detection limits to verify that project analytical requirements were met.
- A review to verify that corrective actions were initiated, as necessary, based on the data review findings.

- A qualification of the data using appropriate qualifier flags, as necessary, to reflect data usability limitations.

- Other method-specific QC requirements.

Data flags were assigned according to the QAPP. These flags, as well as the reason for each flag, were entered into the electronic database. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations. The data reported were qualified by a single final flag that reflects the most conservative of the applied validation qualifiers. The final flag also includes matrix and blank sample impacts.

The data flags are defined below:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R = The sample result was rejected because of serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte could not be verified.
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The findings of the data review and verification are summarized in the following sections. As previously discussed, the flags on the final data tables reflect the most conservative validation qualifier.

Holding Times

All holding-time criteria were met, with the following exception:

- For method SW7470A-TCLP in soil, the holding time was exceeded for samples HA-05-S-00, HA-06-S-00, HA-11-S-00, HA-13-S-00, and HA-15-S-00. For this matrix and method combination, 100 percent of the results were rejected for project use.

Calibration

All initial and continuing calibration requirements were met with the following exceptions:

- For method SW8260B in water, the instrument was not calibrated for 1,1,1,2-tetrachloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloropropene, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dibromoethane(EDB), 1,2-dichlorobenzene, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,3-dichloropropane,

1 1,4-dichlorobenzene, 2,2-dichloropropane, 2-butanone, 2-chlorotoluene, 2-hexanone,
2 4-chlorotoluene, 4-isopropyltoluene, 4-methyl-2-pentanone, acetone, acrolein,
3 acrylonitrile, benzene, bromobenzene, bromochloromethane, bromodichloromethane,
4 bromomethane, carbon disulfide, carbon tetrachloride, chloroethane, cis-1,3-
5 dichloropropene, dibromochloromethane, dibromomethane, dichlorodifluoromethane,
6 hexachlorobutadiene, isopropylbenzene (Cumene), methyl iodide, methylene chloride,
7 MTBE, naphthalene, n-butylbenzene, n-propylbenzene, o-xylene, p,m-xylene, sec-
8 butylbenzene, styrene, tert-butylbenzene, trans-1,3-dichloropropene,
9 trichlorofluoromethane, and vinyl acetate. For this matrix and method combination,
10 0.2 percent of the results were qualified as estimated detected results, 15.5 percent of the
11 results were qualified as estimated nondetected results.

12 • For method SW8260B in water, the initial calibration relative response factor was below
13 control limits for acrolein. For this matrix and method combination, 0.8 percent of the
14 results were qualified as estimated nondetected results.

15 • For method SW8260B in water, the continuing calibration response factor was below
16 control limits for acrolein. For this matrix and method combination, 0.3 percent of the
17 results were qualified as nondetected results.

18 • For method SW8260B in water, the continuing calibration percent drift was above the
19 upper control limit for 2,2-dichloropropane, acetone, acrolein, dichlorodifluoromethane,
20 and vinyl acetate. For this matrix and method combination, 1.0 percent of the results
21 were qualified as nondetected results.

22 • For method SW8260B in water, one result was greater than the calibration range for
23 carbon tetrachloride. For this matrix and method combination, 0.1 percent of the results
24 were qualified as estimated detected results.

25 Method Blanks and Instrument Blanks

26 Method blanks and instrument blanks were analyzed at the required frequency and were
27 free of contamination that would have affected the reported sample results with the
28 following exceptions:

29 • For method RSK-175 in water, the laboratory method blank had detections for methane.
30 For this matrix and method combination, 33.3 percent of the results were qualified as
31 nondetected results.

32 • For method SM5220C in water, the laboratory method blank had detections for chemical
33 oxygen demand. For this matrix and method combination, 100 percent of the results
34 were qualified as nondetected results.

35 • For method SW8260B in water, the laboratory method blank had detections for
36 methylene chloride. For this matrix and method combination, 0.2 percent of the results
37 were qualified as nondetected results.

38 • For method TO15 SIM in air, the laboratory method blank had detections for
39 tetrachloroethylene. For this matrix and method combination, 2.1 percent of the results
40 were qualified as nondetected results.

1 Field Blanks

2 Trip blanks (TB) and equipment rinsate blanks (EB) were collected and analyzed at the
3 required frequency and were free of contamination that would have affected the reported
4 sample results with the following exception:

- 5 • For method SW8260B in water, the TB had detections for methylene chloride. For this
6 matrix and method combination, 0.2 percent of the results were qualified as nondetected
7 results.

8 Field Duplicates

9 FDs were collected at the required frequency stated in the QAPP (10 percent), with the
10 following exceptions:

- 11 • A soil FD was not collected for methods SW6010B-TCLP and SW7470A-TCLP. Field
12 precision cannot be assessed for these methods.
- 13 • A water FD was not collected for methods E150.1, SM2540B, SM2540D, SM2540E, and
14 SM5220C. Field precision cannot be assessed for these methods.

15 A comparison of N sample counts and FD sample counts is presented in Table 3. A list of
16 FDs and associated parent samples is presented in Table 4.

TABLE 3

N and FD Sample Counts by Matrix and Method

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | N | FD |
|--------|--------------|----|----|
| Air | TO15 SIM | 6 | 2 |
| Soil | SW6010B | 22 | 4 |
| Soil | SW6010B-TCLP | 5 | 0 |
| Soil | SW7470A | 3 | 1 |
| Soil | SW7470A-TCLP | 5 | 0 |
| Soil | SW8260B | 7 | 1 |
| Soil | SW8270C | 1 | 1 |
| Water | E150.1 | 2 | 0 |
| Water | RSK-175 | 4 | 1 |
| Water | SM2540B | 2 | 0 |
| Water | SM2540D | 2 | 0 |
| Water | SM2540E | 2 | 0 |
| Water | SM5220C | 2 | 0 |
| Water | E300 1 | 4 | 1 |
| Water | SW6010B | 7 | 1 |
| Water | SW8260B | 22 | 3 |

TABLE 4

List of FDs

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | FD | N |
|---------------|-----------------------------|--------------------------|
| Air | SLOP-6317-IA-SW-FD | SLOP-6317-IA-SW |
| Air | SLOP-6317-IA-SW-FD_20080529 | SLOP-6317-IA-SW_20080529 |
| Soil | FD-051408B | HA-20-S-00 |
| Soil | FD-051408C | HA-22-S-00 |
| Soil | FD-052108A | CB-02-S-30 |
| Soil | FD-S-051308A | HA-09-S-00 |
| Soil | FD-S-051308B | HA-11-S-00 |
| Soil | FD-S-051408 | HA-18-S-00 |
| Water | FD-W-060408A | MW-113-W-00 |
| Water | FD-W-060508A | MW-115-W-00 |
| Water | FD-W-060508B | MW-115-W-00 |
| Water | SLOP-6321-5-24-FD | SLOP-6321-5-24 |

The relative percent differences (RPD) between the native and FD samples met acceptance criteria with the following exception:

- For method SW6010B in soil, the FD RPD was above the upper control limit for lead. For this matrix and method combination, 4.0 percent of the results were qualified as estimated detected results.

Surrogates

Surrogates were added to samples according to method requirements. Surrogate recoveries met the acceptance criteria stated in the QAPP, with the following exception:

- For method SW8260B in soil, the surrogate percent recovery was above the upper control limit for sample CB-06-S-21.5. For this matrix and method combination, 0.2 percent of the results were qualified as estimated detected results.

Internal Standards

Internal standards were added to samples according to method requirements. Internal standards met the method acceptance criteria.

Laboratory Control Samples

LCS/LCSDs were analyzed, as required, and met all accuracy criteria with the following exceptions:

- For method SW8260B in soil, the LCS percent recovery was below the lower control limit for chloroethane and methylene chloride. For this matrix and method combination, 1.2 percent of the results were qualified as estimated nondetected results.
- For method SW8260B in water, the LCS percent recovery was below the lower control limit for 1,1-dichloroethene, 1,2,3-trichloropropane, 2,2-dichloropropane, 2-butanone, and acrolein. For this matrix and method combination, 0.6 percent of the results were qualified as estimated nondetected results.
- For method SW8260B in soil, the LCS percent recovery was above the upper control limit for 4-methyl-2-pentanone. For this matrix and method combination, 0.2 percent of the results were qualified as estimated detected results.
- For method SW8260B in soil, the LCS/LCSD RPD was above the upper control limit for acrolein, bromomethane, chloroethane, and dibromomethane. For this matrix and method combination, 1.2 percent of the results were qualified as estimated nondetected results.
- For method SW8260B in water, LCS/LCSD RPD was above the upper control limit for 1,2,3-trichloropropane, bromomethane, carbon disulfide, carbon tetrachloride, chloromethane, dichlorodifluoromethane, hexachlorobutadiene, methyl iodide, naphthalene, o-xylene, trichlorofluoromethane, and vinyl chloride. For this matrix and method combination, 0.1 percent of the results were qualified as estimated detected results and 0.8 percent of the results were qualified as estimated nondetected results.

Matrix Spikes

The results of MS/MSD analyses provide information about the possible influence of the matrix on either accuracy or precision of the measurements. MS/MSD samples were collected at the required frequency stated in the QAPP (5 percent), with the following exceptions:

- A soil MS/MSD pair was not collected for methods SW6010B-TCLP, SW7470A, and SW7470A-TCLP. Field precision and matrix effects cannot be assessed for these methods.
- A water MS/MSD pair was not collected for methods E150.1, RSK-175, SM2540B, SM2540D, SM2540E, SM5220C, E300.1, and SW6010B. Field precision and matrix effects cannot be assessed for these methods.

Table 5 presents the MS/MSD sample counts by method and matrix.

TABLE 5**N and MS/MSD Sample Counts by Matrix and Method***Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri*

| Matrix | Method | N | MS/MSD Pairs |
|---------------|---------------|----------|---------------------|
| Air | TO15 SIM | 6 | 0 |
| Soil | SW6010B | 22 | 3 |
| Soil | SW6010B-TCLP | 5 | 0 |
| Soil | SW7470A | 3 | 0 |
| Soil | SW7470A-TCLP | 5 | 0 |
| Soil | SW8260B | 7 | 1 |
| Soil | SW8270C | 1 | 1 |
| Water | E150.1 | 2 | 0 |
| Water | RSK-175 | 4 | 0 |
| Water | SM2540B | 2 | 0 |
| Water | SM2540D | 2 | 0 |
| Water | SM2540E | 2 | 0 |
| Water | SM5220C | 2 | 0 |
| Water | E300 1 | 4 | 0 |
| Water | SW6010B | 7 | 0 |
| Water | SW8260B | 22 | 3 |

The U.S. Army Corps of Engineers-Kansas City District Data Validation Guidelines defines when matrix influences may be significant. A range around the compound screening level is calculated based upon the sample result, the screening level, the percent recovery, and the RPD of the MS/MSD pair. If the sample result falls within the range, the matrix influence is considered significant. All sample results with MS/MSD qualifications were evaluated by this guidance MS/MSD recoveries and the associated RPD met all criteria, with the following exceptions:

- For method SW6010B in soil, the MS and/or the MSD percent recovery was below the lower control limit for lead. For this matrix and method combination, 4.0 percent of the results were qualified as estimated detected results.
- For method SW8260B in soil, the matrix spike and/or the matrix spike duplicate percent recovery was below the lower control limit for 1,1,2,2-tetrachloroethane, 1,2-dibromo-3-chloropropane, 2-butanone, acrolein, methylene chloride, and naphthalene. For this matrix and method combination, 1.2 percent of the results were qualified as estimated nondetected results.
- For method SW8260B in water, the matrix spike and/or the matrix spike duplicate percent recovery was below the lower control limit for 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2-dichloroethane, 2,2-dichloropropane, dichlorodifluoromethane, methylene chloride, styrene, and vinyl acetate. For this matrix and method combination,

0.1 percent of the results were qualified as estimated detected results, 0.4 percent of the results were qualified as estimated nondetected results.

- For method SW8260B in soil, the matrix spike/matrix spike duplicate relative percent difference was above the upper control limit for 2-butanone, acetone, acrolein, bromomethane, hexachlorobutadiene, and methylene chloride. For this matrix and method combination, 1.2 percent of the results were qualified as estimated nondetected results.
- For method SW8260B in water, the matrix spike/matrix spike duplicate relative percent difference was above the upper control limit for chloromethane, naphthalene, and vinyl acetate. For this matrix and method combination, 0.2 percent of the results were qualified as estimated nondetected results.

Serial Dilution

Serial dilutions were analyzed, as required, and met all QAPP criteria.

Chain of Custody

Each sample was documented in a completed chain of custody and received at the laboratory in good condition. There were minor changes to field sample identifications that were well-documented in the laboratory reports.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decisionmaking process. The procedures for assessing the precision, accuracy, representativeness, completeness, and comparability parameters (PARCC) were based on the approved QAPP. The following summarizes the PARCC findings:

- Overall, this project is 99.8 percent complete. For method SW7470A-TCLP in soil, 100.0 percent of the mercury results were qualified as rejected results due to holding-time exceedances. These method/matrix/analyte combinations did not meet the completeness goal stated in the QAPP (90 percent).
- Initial and continuing calibration exceedances were observed for method SW8260B, resulting in data qualified as estimated.
- Method blanks and field blanks were free of contamination with minor exceptions noted. The affected data were qualified as nondetect and flagged "U" at the measured concentration. Approximately 0.6 percent of the sample data were qualified due to blank contamination. Systematic errors were not apparent.
- Surrogate exceedances were observed for method E300.1 in water, and method SW8260B in soil, resulting in data qualified as estimated.
- LCS/LCSD recovery and RPD exceedances were observed for method SW8260B in soil and water, resulting in data qualified as estimated.

- 1 6. A FD RPD exceedance was observed for method SW6010B in soil, resulting in data
2 qualified as estimated.
- 3 7. MS/MSD recovery and RPD exceedances were observed for method SW6010B in soil
4 and method SW8260B in soil and water, resulting in data qualified as estimated.
- 5 8. A soil FD was not collected for methods SW6010B-TCLP and SW7470A-TCLP. A water
6 FD was not collected for methods E150.1, SM2540B, SM2540D, SM2540E, and SM5220C.
7 Field precision cannot be assessed for these matrix/method combinations.
- 8 9. A soil MS/MSD pair was not collected for methods SW6010B-TCLP, SW7470A, and
9 SW7470A-TCLP. A water MS/MSD pair was not collected for methods E150.1, RSK-175,
10 SM2540B, SM2540D, SM2540E, SM5220C, E300.1, and SW6010B. Field precision and
11 matrix effects cannot be assessed for these matrix/method combinations.
- 12 10. The precision and accuracy of the data, as measured by field and laboratory QC
13 indicators, suggest that the project goals have been met and the data are acceptable for
14 project decisionmaking as qualified.

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|--------------|-----------------------------|-----------------|---------|-------------------|-------------------|-----------------------|
| Air | TO15 SIM | Tetrachloroethylene | SLOP-6317-IA-NE | 0.25 | µg/m ³ | LB<RL | U |
| Soil | SW6010B | Lead | FD-051408B | 15 | mg/kg | FD>RPD | J |
| Soil | SW6010B | Lead | HA-20-S-00 | 54.8 | mg/kg | FD>RPD | J |
| Soil | SW6010B | Lead | HA-21-S-00 | 31 | mg/kg | SD<LCL | J |
| Soil | SW6010B | Lead | HA-22-S-00 | 65 | mg/kg | MS<LCL | J |
| Soil | SW6010B | Lead | HA-22-S-00 | 65 | mg/kg | SD<LCL | J |
| Soil | SW7470A-TCLP | Mercury, TCLP | HA-05-S-00 | 0.00025 | mg/L | HTa>UCL | R |
| Soil | SW7470A-TCLP | Mercury, TCLP | HA-06-S-00 | 0.00025 | mg/L | HTa>UCL | R |
| Soil | SW7470A-TCLP | Mercury, TCLP | HA-11-S-00 | 0.00025 | mg/L | HTa>UCL | R |
| Soil | SW7470A-TCLP | Mercury, TCLP | HA-13-S-00 | 0.00025 | mg/L | HTa>UCL | R |
| Soil | SW7470A-TCLP | Mercury, TCLP | HA-15-S-00 | 0.00025 | mg/L | HTa>UCL | R |
| Soil | SW8260B | 1,1,2,2-Tetrachloroethane | CB-06-S-21.5 | 2.4 | µg/kg | MS<LCL | UJ |
| Soil | SW8260B | 1,1,2,2-Tetrachloroethane | CB-06-S-21.5 | 2.4 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | 1,2-Dibromo-3-chloropropane | CB-06-S-21.5 | 12 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | 2-Butanone | CB-06-S-21.5 | 12 | µg/kg | MSRPD | UJ |
| Soil | SW8260B | 2-Butanone | CB-06-S-21.5 | 12 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | 4-Methyl-2-pentanone | CB-07-S-2 | 2.4 | µg/kg | LCS>UCL | J |
| Soil | SW8260B | Acetone | CB-06-S-21.5 | 12 | µg/kg | MSRPD | UJ |
| Soil | SW8260B | Acrolein | CB-06-S-21.5 | 30.1 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Acrolein | CB-06-S-21.5 | 30.1 | µg/kg | MSRPD | UJ |
| Soil | SW8260B | Acrolein | CB-06-S-21.5 | 30.1 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | Bromomethane | CB-02-S-30 | 2.5 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Bromomethane | CB-06-S-21.5 | 2.4 | µg/kg | MSRPD | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|------------------------|--------------|--------|-------|-------------------|-----------------------|
| Soil | SW8260B | Bromomethane | FD-052108A | 2.4 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Chloroethane | CB-02-S-30 | 6.3 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Chloroethane | CB-02-S-30 | 6.3 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Chloroethane | FD-052108A | 5.9 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Chloroethane | FD-052108A | 5.9 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Dibromomethane | CB-07-S-2 | 2.7 | µg/kg | LCSRPD | UJ |
| Soil | SW8260B | Hexachlorobutadiene | CB-06-S-21.5 | 4.8 | µg/kg | MSRPD | UJ |
| Soil | SW8260B | Methylene chloride | CB-03-S-8 | 6 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Methylene chloride | CB-04-S-19 | 6 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Methylene chloride | CB-06-S-21.5 | 6 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Methylene chloride | CB-06-S-21.5 | 6 | µg/kg | MS<LCL | UJ |
| Soil | SW8260B | Methylene chloride | CB-06-S-21.5 | 6 | µg/kg | MSRPD | UJ |
| Soil | SW8260B | Methylene chloride | CB-06-S-21.5 | 6 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | Methylene chloride | CB-07-S-2 | 6.8 | µg/kg | LCS<LCL | UJ |
| Soil | SW8260B | Naphthalene | CB-06-S-21.5 | 2.4 | µg/kg | SD<LCL | UJ |
| Soil | SW8260B | Tetrachloroethene | CB-06-S-21.5 | 2.8 | µg/kg | Sur>UCL | J |
| Water | RSK-175 | Methane | FD-W-060508B | 2.5 | µg/L | LB<RL | U |
| Water | RSK-175 | Methane | MW-107-W-00 | 3 | µg/L | LB<RL | U |
| Water | RSK-175 | Methane | MW-110-W-00 | 2.7 | µg/L | LB<RL | U |
| Water | RSK-175 | Methane | MW-111-W-00 | 2.2 | µg/L | LB<RL | U |
| Water | RSK-175 | Methane | MW-115-W-00 | 2.4 | µg/L | LB<RL | U |
| Water | SM5220C | Chemical Oxygen Demand | Disposal - 1 | 62 | mg/L | LB<RL | U |
| Water | SM5220C | Chemical Oxygen Demand | Disposal - 2 | 20 | mg/L | LB<RL | U |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|---------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 1,1,1,2-Tetrachloroethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1,2-Tetrachloroethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1,2-Tetrachloroethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1,2-Tetrachloroethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1,2-Tetrachloroethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1-Trichloroethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1-Trichloroethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1-Trichloroethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1-Trichloroethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,1-Trichloroethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,2-Trichloroethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,2-Trichloroethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,2-Trichloroethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,2-Trichloroethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1,2-Trichloroethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1-Dichloroethene | MW-116-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 1,1-Dichloropropene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1-Dichloropropene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1-Dichloropropene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1-Dichloropropene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,1-Dichloropropene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichlorobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichlorobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|-----------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 1,2,3-Trichlorobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichlorobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichlorobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | CB-04-W-27.5 | 1 | µg/L | MS<LCL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-117-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 1,2,3-Trichloropropane | MW-117-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | MW-108-W-00 | 1 | µg/L | MS<LCL | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trichlorobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trimethylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trimethylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trimethylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trimethylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2,4-Trimethylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromo-3-chloropropane | FD-W-060508A | 2 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|-----------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 1,2-Dibromo-3-chloropropane | MW-107-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromo-3-chloropropane | MW-110-W-00 | 40 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromo-3-chloropropane | MW-112-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromo-3-chloropropane | MW-115-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromoethane(EDB) | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromoethane(EDB) | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromoethane(EDB) | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromoethane(EDB) | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dibromoethane(EDB) | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichlorobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichlorobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichlorobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichlorobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichlorobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,2-Dichloroethane | CB-04-W-27.5 | 189 | µg/L | MS<LCL | J |
| Water | SW8260B | 1,2-Dichloroethane | CB-04-W-27.5 | 189 | µg/L | SD<LCL | J |
| Water | SW8260B | 1,3,5-Trimethylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3,5-Trimethylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3,5-Trimethylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3,5-Trimethylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3,5-Trimethylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichlorobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichlorobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|---------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 1,3-Dichlorobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichlorobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichlorobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichloropropane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichloropropane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichloropropane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichloropropane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,3-Dichloropropane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,4-Dichlorobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,4-Dichlorobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,4-Dichlorobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,4-Dichlorobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 1,4-Dichlorobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | FD-W-060408A | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | FD-W-060408A | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-106-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-106-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-108-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-108-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-108-W-00 | 1 | µg/L | MS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-108-W-00 | 1 | µg/L | SD<LCL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|---------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 2,2-Dichloropropane | MW-109-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-109-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-113-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-113-W-00 | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-114-W | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-114-W | 1 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2,2-Dichloropropane | MW-116-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | 2-Butanone | FD-W-060508A | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Butanone | MW-107-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Butanone | MW-110-W-00 | 200 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Butanone | MW-112-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Butanone | MW-115-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Butanone | MW-117-W-00 | 10 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | 2-Chlorotoluene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Chlorotoluene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Chlorotoluene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Chlorotoluene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Chlorotoluene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Hexanone | FD-W-060508A | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Hexanone | MW-107-W-00 | 5 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|----------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | 2-Hexanone | MW-110-W-00 | 100 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Hexanone | MW-112-W-00 | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 2-Hexanone | MW-115-W-00 | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Chlorotoluene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Chlorotoluene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Chlorotoluene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Chlorotoluene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Chlorotoluene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Isopropyltoluene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Isopropyltoluene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Isopropyltoluene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Isopropyltoluene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Isopropyltoluene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Methyl-2-pentanone | FD-W-060508A | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Methyl-2-pentanone | MW-107-W-00 | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Methyl-2-pentanone | MW-110-W-00 | 100 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Methyl-2-pentanone | MW-112-W-00 | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | 4-Methyl-2-pentanone | MW-115-W-00 | 5 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acetone | FD-W-060508A | 10.4 | µg/L | NoCAL | J |
| Water | SW8260B | Acetone | MW-107-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acetone | MW-110-W-00 | 200 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acetone | MW-112-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acetone | MW-115-W-00 | 8.8 | µg/L | NoCAL | J |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|----------|-------------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Acetone | MW-117-W-00 | 10 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Acrolein | FD-W-060408A | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | FD-W-060508A | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrolein | MW-106-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-107-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrolein | MW-108-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-109-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-110-W-00 | 200 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrolein | MW-112-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrolein | MW-113-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-114-W | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-115-W-00 | 10 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrolein | MW-116-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-117-W-00 | 10 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Acrolein | MW-117-W-00 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | MW-117-W-00 | 10 | µg/L | LCS<LCL | UJ |
| Water | SW8260B | Acrolein | SLOP-4701-5-22 | 10 | µg/L | CCV<RF | UJ |
| Water | SW8260B | Acrolein | SLOP-4701-5-22 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | SLOP-6317-5-25 | 10 | µg/L | CCV<RF | UJ |
| Water | SW8260B | Acrolein | SLOP-6317-5-25 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | SLOP-6321-5-24 | 10 | µg/L | CCV<RF | UJ |
| Water | SW8260B | Acrolein | SLOP-6321-5-24 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | SLOP-6321-5-24-FD | 10 | µg/L | CCV<RF | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|--------------------|-------------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Acrolein | SLOP-6321-5-24-FD | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrolein | SLOPVI-033108 | 10 | µg/L | CCV<RF | UJ |
| Water | SW8260B | Acrolein | SLOPVI-033108 | 10 | µg/L | IC RRF | UJ |
| Water | SW8260B | Acrylonitrile | FD-W-060508A | 4 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrylonitrile | MW-107-W-00 | 4 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrylonitrile | MW-110-W-00 | 80 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrylonitrile | MW-112-W-00 | 4 | µg/L | NoCAL | UJ |
| Water | SW8260B | Acrylonitrile | MW-115-W-00 | 4 | µg/L | NoCAL | UJ |
| Water | SW8260B | Benzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Benzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Benzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Benzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Benzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromobenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromobenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromobenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromobenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromobenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromochloromethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromochloromethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromochloromethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromochloromethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromochloromethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|----------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Bromodichloromethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromodichloromethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromodichloromethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromodichloromethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromodichloromethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Bromomethane | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Carbon disulfide | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon disulfide | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon disulfide | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon disulfide | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon disulfide | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon disulfide | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Carbon tetrachloride | CB-01-W-30 | 4160 | µg/L | >ICLinearRange | J |
| Water | SW8260B | Carbon tetrachloride | FD-W-060508A | 0.43 | µg/L | NoCAL | J |
| Water | SW8260B | Carbon tetrachloride | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon tetrachloride | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon tetrachloride | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Carbon tetrachloride | MW-115-W-00 | 0.38 | µg/L | NoCAL | J |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|-------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Carbon tetrachloride | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Chloroethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Chloroethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Chloroethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Chloroethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Chloroethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Chloromethane | MW-108-W-00 | 1 | µg/L | MSRPD | UJ |
| Water | SW8260B | Chloromethane | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | cis-1,3-Dichloropropene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | cis-1,3-Dichloropropene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | cis-1,3-Dichloropropene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | cis-1,3-Dichloropropene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | cis-1,3-Dichloropropene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromochloromethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromochloromethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromochloromethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromochloromethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromochloromethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromomethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromomethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromomethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromomethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dibromomethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|---------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Dichlorodifluoromethane | Disposal - 1 | 1.7 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Dichlorodifluoromethane | Disposal - 2 | 1.7 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Dichlorodifluoromethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-108-W-00 | 1 | µg/L | MS<LCL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-108-W-00 | 1 | µg/L | SD<LCL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Dichlorodifluoromethane | MW-117-W-00 | 1 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Hexachlorobutadiene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Hexachlorobutadiene | MW-117-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Isopropylbenzene (Cumene) | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Isopropylbenzene (Cumene) | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Isopropylbenzene (Cumene) | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Isopropylbenzene (Cumene) | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Isopropylbenzene (Cumene) | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|--------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Methyl iodide | FD-W-060508A | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methyl iodide | MW-107-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methyl iodide | MW-110-W-00 | 40 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methyl iodide | MW-112-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methyl iodide | MW-115-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methyl iodide | MW-116-W-00 | 1.2 | µg/L | LCSRPD | J |
| Water | SW8260B | Methylene chloride | FD-W-060408A | 0.56 | µg/L | LB>RL | U |
| Water | SW8260B | Methylene chloride | FD-W-060408A | 0.56 | µg/L | TB>RL | U |
| Water | SW8260B | Methylene chloride | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methylene chloride | MW-106-W-00 | 0.54 | µg/L | LB>RL | U |
| Water | SW8260B | Methylene chloride | MW-106-W-00 | 0.54 | µg/L | TB>RL | U |
| Water | SW8260B | Methylene chloride | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methylene chloride | MW-108-W-00 | 0.53 | µg/L | LB>RL | U |
| Water | SW8260B | Methylene chloride | MW-108-W-00 | 0.53 | µg/L | MS<LCL | U |
| Water | SW8260B | Methylene chloride | MW-108-W-00 | 0.53 | µg/L | SD<LCL | U |
| Water | SW8260B | Methylene chloride | MW-108-W-00 | 0.53 | µg/L | TB>RL | U |
| Water | SW8260B | Methylene chloride | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methylene chloride | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Methylene chloride | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | MTBE | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | MTBE | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | MTBE | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | MTBE | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|-----------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | MTBE | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | CB-04-W-27.5 | 1 | µg/L | MSRPD | UJ |
| Water | SW8260B | Naphthalene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Naphthalene | MW-117-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | n-Butylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Butylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Butylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Butylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Butylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Propylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Propylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Propylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Propylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | n-Propylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | o-Xylene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | o-Xylene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | o-Xylene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | o-Xylene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | o-Xylene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|-------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | o-Xylene | MW-117-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | p,m-Xylene | FD-W-060508A | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | p,m-Xylene | MW-107-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | p,m-Xylene | MW-110-W-00 | 40 | µg/L | NoCAL | UJ |
| Water | SW8260B | p,m-Xylene | MW-112-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | p,m-Xylene | MW-115-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | sec-Butylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | sec-Butylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | sec-Butylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | sec-Butylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | sec-Butylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Styrene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Styrene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Styrene | MW-108-W-00 | 1 | µg/L | MS<LCL | UJ |
| Water | SW8260B | Styrene | MW-108-W-00 | 1 | µg/L | SD<LCL | UJ |
| Water | SW8260B | Styrene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Styrene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Styrene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | tert-Butylbenzene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | tert-Butylbenzene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | tert-Butylbenzene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | tert-Butylbenzene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | tert-Butylbenzene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|---------------------------|--------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | trans-1,3-Dichloropropene | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | trans-1,3-Dichloropropene | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | trans-1,3-Dichloropropene | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | trans-1,3-Dichloropropene | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | trans-1,3-Dichloropropene | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | FD-W-060508A | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | MW-107-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | MW-110-W-00 | 20 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | MW-112-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | MW-115-W-00 | 1 | µg/L | NoCAL | UJ |
| Water | SW8260B | Trichlorofluoromethane | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |
| Water | SW8260B | Vinyl acetate | FD-W-060408A | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl acetate | FD-W-060508A | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Vinyl acetate | MW-106-W-00 | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-107-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Vinyl acetate | MW-108-W-00 | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-108-W-00 | 2 | µg/L | MS<LCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-108-W-00 | 2 | µg/L | MSRPD | UJ |
| Water | SW8260B | Vinyl acetate | MW-108-W-00 | 2 | µg/L | SD<LCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-109-W-00 | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-110-W-00 | 40 | µg/L | NoCAL | UJ |
| Water | SW8260B | Vinyl acetate | MW-112-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Vinyl acetate | MW-113-W-00 | 2 | µg/L | CCV>UCL | UJ |

TABLE 6

Verification Findings

Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri

| Matrix | Method | Analyte | Sample ID | Result | Units | Validation Reason | Final Validation Flag |
|--------|---------|----------------|-------------|--------|-------|-------------------|-----------------------|
| Water | SW8260B | Vinyl acetate | MW-114-W | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl acetate | MW-115-W-00 | 2 | µg/L | NoCAL | UJ |
| Water | SW8260B | Vinyl acetate | MW-116-W-00 | 2 | µg/L | CCV>UCL | UJ |
| Water | SW8260B | Vinyl chloride | MW-116-W-00 | 1 | µg/L | LCSRPD | UJ |

TABLE 7**Verification Reason Code Descriptions***Former Hanley Area Remedial Investigation Report, St. Louis Ordnance Plant, St. Louis, Missouri*

| Verification Reason Code | Reason Code Description |
|---------------------------------|--|
| >ICLinearRange | Result greater than linear calibration range |
| CCV<RF | Continuing calibration response factor below the lower control limit |
| CCV>UCL | Continuing calibration recovery greater than upper control limit |
| FD>RPD | Field duplicate exceeds RPD criteria |
| HTa>UCL | Holding time exceeded |
| IC RRF | Initial calibration relative response factor below lower control limit |
| LB<RL | Laboratory blank contamination less than the RL |
| LB>RL | Laboratory blank contamination greater than the RL |
| LCS<LCL | LCS recovery less than lower control limit |
| LCS>UCL | LCS recovery greater than upper control limit |
| LCSRPD | LCS/LCSD RPD criteria exceeded |
| MS<LCL | Matrix spike recovery less than lower control limit |
| MSRPD | Matrix spike RPD criteria exceedance |
| NoCAL | No calibration analyzed in the analytical batch |
| SD<LCL | Matrix spike duplicate recovery criteria less than lower control limit |
| Sur<LCL | Surrogate recovery less than lower control limit |
| Sur>UCL | Surrogate recovery greater than upper control limit |
| TB>RL | Trip blank concentration greater than the RL |

June 10, 2008
Project No. SG15-4302

David Lee
CH2M Hill
727 North 1st Street, Suite 400
St. Louis, Missouri 63102

Subject: Geotechnical Laboratory Testing
SLOP R1
St. Louis, Missouri

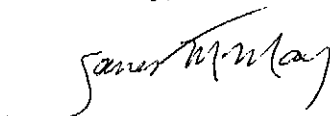
Dear Mr. Lee:

Please find the attached results of geotechnical tests performed on five Shelby tube samples provided to Shively Geotechnical, Inc. by your office. Samples were submitted for particle size analysis and hydraulic conductivity testing.

Testing was performed in accordance with the American Society for Testing and Materials (ASTM) test methods D 422 - particle size analysis of soils and D 5084 - hydraulic conductivity. Hydraulic conductivity results can be found on the attached Test Results data sheets and summary table. Particle size results are on the Grain Size Distribution Curves.

We appreciate the opportunity to be of service to CH2M Hill. Please call me if you have any questions or if we can be of additional assistance.

Sincerely,



Janet M. May
Technical Services Manager

Attachments

**SUMMARY OF
LABORATORY TEST RESULTS
FOR
CH2MHILL**

**Site:
SLOP R1
4301 GOODFELLOW BOULEVARD
ST. LOUIS, MISSOURI**

| Sample Identification | Sample Depth, (Feet) | Moisture Content, % | Dry Unit Weight, pcf | Hydraulic Conductivity, cm/sec | Average Hydraulic Gradient |
|-----------------------|----------------------|---------------------|----------------------|--------------------------------|----------------------------|
| CB-02-S-3 | 3.0 - 5.0 | 24.7 | 97.6 | 2.3×10^{-7} | 1.4 |
| CB-05-S-12 | 12.0 - 14.0 | 25.6 | 98.3 | 1.2×10^{-6} | 1.4 |
| CB-05-S-17 | 17.0 - 19.0 | 23.6 | 101.0 | 3.1×10^{-5} | 0.8 |
| CB-06-S-13 | 13.0 - 15.0 | 26.8 | 96.2 | 1.5×10^{-6} | 0.9 |
| CB-06-S-20 | 20.0 - 22.0 | 27.3 | 95.3 | 1.5×10^{-7} | 1.4 |

% - Percent

cm/sec - Centimeters per Second

pcf - Pounds per cubic foot

Vjm
Vmc

June 10, 2008
Project No. SG15-4302
Shively Geotechnical, Inc.

HYDRAULIC CONDUCTIVITY TEST RESULTS

✓
✓ MSC

PROJECT DATA

| | | | |
|-------------------|--|------------------|----------------|
| Date Sampled: | May 21, 2008 | Sample Number: | CB-02-S-3 |
| Project Number: | SG15-4302 | Sample Depth: | 3.0 - 5.0 Feet |
| Project Name: | SLOP R1 | Sample Type: | Shelby Tube |
| Project Location: | 4301 Goodfellow Blvd. St. Louis, Missouri | Test Start Date: | May 28, 2008 |
| | | Test Method: | ASTM D 5084 |

TEST SPECIMEN DATA

| | |
|-------------------|--------------------------------|
| Initial Data: | Final Data: |
| Length: | 3.886 inches |
| Diameter: | 2.806 inches |
| Sample Weight: | 768.0 grams |
| Dry Unit Weight: | 97.6 pcf |
| Moisture Content: | 24.7 percent |
| | Moisture Content: 25.6 percent |

FLOW DATA

| | | | |
|--------------------------------|-----------|----------------------------|-----|
| Permeant Liquid | Tap Water | Cell Pressure, psi | 43 |
| Temperature, °C | 20 | Inflow Pressure, psi | 40 |
| | | Outflow Pressure, psi | 40 |
| B Value (Prior to permeation): | 96% | Average Hydraulic Gradient | 1.4 |

Hydraulic Conductivity

(cm/sec)

| | |
|-----------------|---------|
| Test Interval 1 | 2.6E-07 |
| Test Interval 2 | 1.8E-07 |
| Test Interval 3 | 2.7E-07 |
| Test Interval 4 | 2.1E-07 |

| | |
|-----------|---------|
| Average k | 2.3E-07 |
|-----------|---------|

HYDRAULIC CONDUCTIVITY TEST RESULTS



PROJECT DATA

| | | | |
|-------------------|--|------------------|------------------|
| Date Sampled: | May 27, 2008 | Sample Number: | CB-05-S-12 |
| Project Number: | SG15-4302 | Sample Depth: | 12.0 - 14.0 Feet |
| Project Name: | SLOP R1 | Sample Type: | Shelby Tube |
| Project Location: | 4301 Goodfellow Blvd. St. Louis, Missouri | Test Start Date: | May 28, 2008 |
| | | Test Method: | ASTM D 5084 |

TEST SPECIMEN DATA

| | |
|-------------------|--------------------------------|
| Initial Data: | Final Data: |
| Length: | 3.709 inches |
| Diameter: | 2.863 inches |
| Sample Weight: | 773.8 grams |
| Dry Unit Weight: | 98.3 pcf |
| Moisture Content: | 25.6 percent |
| | Moisture Content: 26.1 percent |

FLOW DATA

| | | | |
|--------------------------------|-----------|----------------------------|-----|
| Permeant Liquid | Tap Water | Cell Pressure, psi | 33 |
| Temperature, °C | 20 | Inflow Pressure, psi | 30 |
| | | Outflow Pressure, psi | 30 |
| B Value (Prior to permeation): | 97% | Average Hydraulic Gradient | 1.4 |

Hydraulic Conductivity

(cm/sec)

| | |
|-----------------|---------|
| Test Interval 1 | 1.3E-06 |
| Test Interval 2 | 1.2E-06 |
| Test Interval 3 | 1.2E-06 |
| Test Interval 4 | 1.1E-06 |

| | |
|-----------|---------|
| Average k | 1.2E-06 |
|-----------|---------|

HYDRAULIC CONDUCTIVITY TEST RESULTS

✓
v MIC

PROJECT DATA

| | | | |
|-------------------|--|------------------|------------------|
| Date Sampled: | May 27, 2008 | Sample Number: | CB-05-S-17 |
| Project Number: | SG15-4302 | Sample Depth: | 17.0 - 19.0 Feet |
| Project Name: | SLOP R1 | Sample Type: | Shelby Tube |
| Project Location: | 4301 Goodfellow Blvd. St. Louis, Missouri | Test Start Date: | May 28, 2008 |
| | | Test Method: | ASTM D 5084 |

TEST SPECIMEN DATA

| | | | |
|-------------------|--------------|-------------------|--------------|
| Initial Data: | | Final Data: | |
| Length: | 3.175 inches | | |
| Diameter: | 2.847 inches | | |
| Sample Weight: | 662.5 grams | | |
| Dry Unit Weight: | 101.0 pcf | | |
| Moisture Content: | 23.6 percent | Moisture Content: | 24.3 percent |

FLOW DATA

| | | | |
|--------------------------------|-----------|----------------------------|-----|
| Permeant Liquid | Tap Water | Cell Pressure, psi | 33 |
| Temperature, °C | 20 | Inflow Pressure, psi | 30 |
| | | Outflow Pressure, psi | 30 |
| B Value (Prior to permeation): | 97% | Average Hydraulic Gradient | 0.8 |

Hydraulic Conductivity (cm/sec)

| | |
|-----------------|---------|
| Test Interval 1 | 3.2E-05 |
| Test Interval 2 | 3.1E-05 |
| Test Interval 3 | 3.1E-05 |
| Test Interval 4 | 3.0E-05 |

| | |
|-----------|---------|
| Average k | 3.1E-05 |
|-----------|---------|

HYDRAULIC CONDUCTIVITY TEST RESULTS



PROJECT DATA

| | | | |
|-------------------|--|------------------|------------------|
| Date Sampled: | May 23, 2008 | Sample Number: | CB-06-S-13 |
| Project Number: | SG15-4302 | Sample Depth: | 13.0 - 15.0 Feet |
| Project Name: | SLOP R1 | Sample Type: | Shelby Tube |
| Project Location: | 4301 Goodfellow Blvd. St. Louis, Missouri | Test Start Date: | June 4, 2008 |
| | | Test Method: | ASTM D 5084 |

TEST SPECIMEN DATA

| | | | |
|-------------------|--------------|-------------------|--------------|
| Initial Data: | | Final Data: | |
| Length: | 3.641 inches | | |
| Diameter: | 2.864 inches | | |
| Sample Weight: | 751.1 grams | | |
| Dry Unit Weight: | 96.2 pcf | | |
| Moisture Content: | 26.8 percent | Moisture Content: | 27.2 percent |

FLOW DATA

| | | | |
|--------------------------------|-----------|----------------------------|-----|
| Permeant Liquid | Tap Water | Cell Pressure, psi | 33 |
| Temperature, °C | 20 | Inflow Pressure, psi | 30 |
| | | Outflow Pressure, psi | 30 |
| B Value (Prior to permeation): | 97% | Average Hydraulic Gradient | 0.9 |

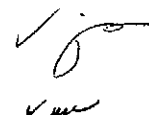
Hydraulic Conductivity

(cm/sec)

| | |
|-----------------|---------|
| Test Interval 1 | 1.6E-06 |
| Test Interval 2 | 1.5E-06 |
| Test Interval 3 | 1.4E-06 |
| Test Interval 4 | 1.5E-06 |

| | |
|-----------|---------|
| Average k | 1.5E-06 |
|-----------|---------|

HYDRAULIC CONDUCTIVITY TEST RESULTS



PROJECT DATA

| | | | |
|-------------------|--|------------------|------------------|
| Date Sampled: | May 23, 2008 | Sample Number: | CB-06-S-20 |
| Project Number: | SG15-4302 | Sample Depth: | 20.0 - 22.0 Feet |
| Project Name: | SLOP R1 | Sample Type: | Shelby Tube |
| Project Location: | 4301 Goodfellow Blvd. St. Louis, Missouri | Test Start Date: | May 28, 2008 |
| | | Test Method: | ASTM D 5084 |

TEST SPECIMEN DATA

| | | | |
|-------------------|--------------|-------------------|--------------|
| Initial Data: | | Final Data: | |
| Length: | 3.843 inches | | |
| Diameter: | 2.830 inches | | |
| Sample Weight: | 769.9 grams | | |
| Dry Unit Weight: | 95.3 pcf | | |
| Moisture Content: | 27.3 percent | Moisture Content: | 28.2 percent |

FLOW DATA

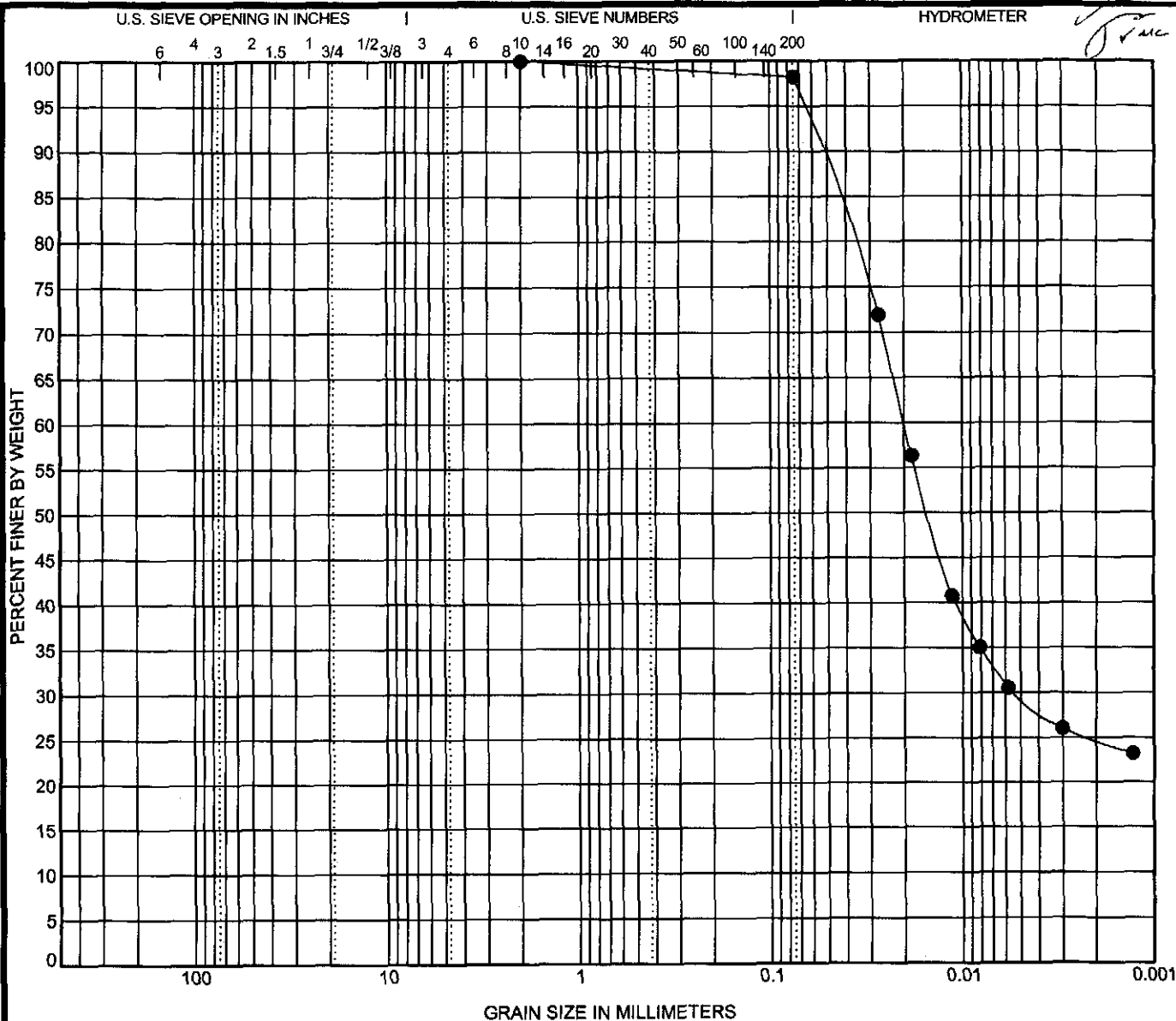
| | | | |
|--------------------------------|-----------|----------------------------|-----|
| Permeant Liquid | Tap Water | Cell Pressure, psi | 33 |
| Temperature, °C | 20 | Inflow Pressure, psi | 30 |
| | | Outflow Pressure, psi | 30 |
| B Value (Prior to permeation): | 95% | Average Hydraulic Gradient | 1.4 |

Hydraulic Conductivity

(cm/sec)

| | |
|-----------------|---------|
| Test Interval 1 | 1.6E-07 |
| Test Interval 2 | 1.6E-07 |
| Test Interval 3 | 1.5E-07 |
| Test Interval 4 | 1.4E-07 |

| | |
|-----------|---------|
| Average k | 1.5E-07 |
|-----------|---------|



| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| Specimen Identification | | Classification | | | | LL | PL | PI | Cc | Cu |
|-------------------------|--------------------|----------------------|------|-------|-----|---------|-------|-------|-------|----|
| ● | CB-02-S-3 3.0-5.0' | Brown Silty CLAY, CL | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Specimen Identification | | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay | |
| ● | CB-02-S-3 3.0-5.0' | 2 | 0.02 | 0.005 | | 0.0 | 1.8 | 68.7 | 29.5 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



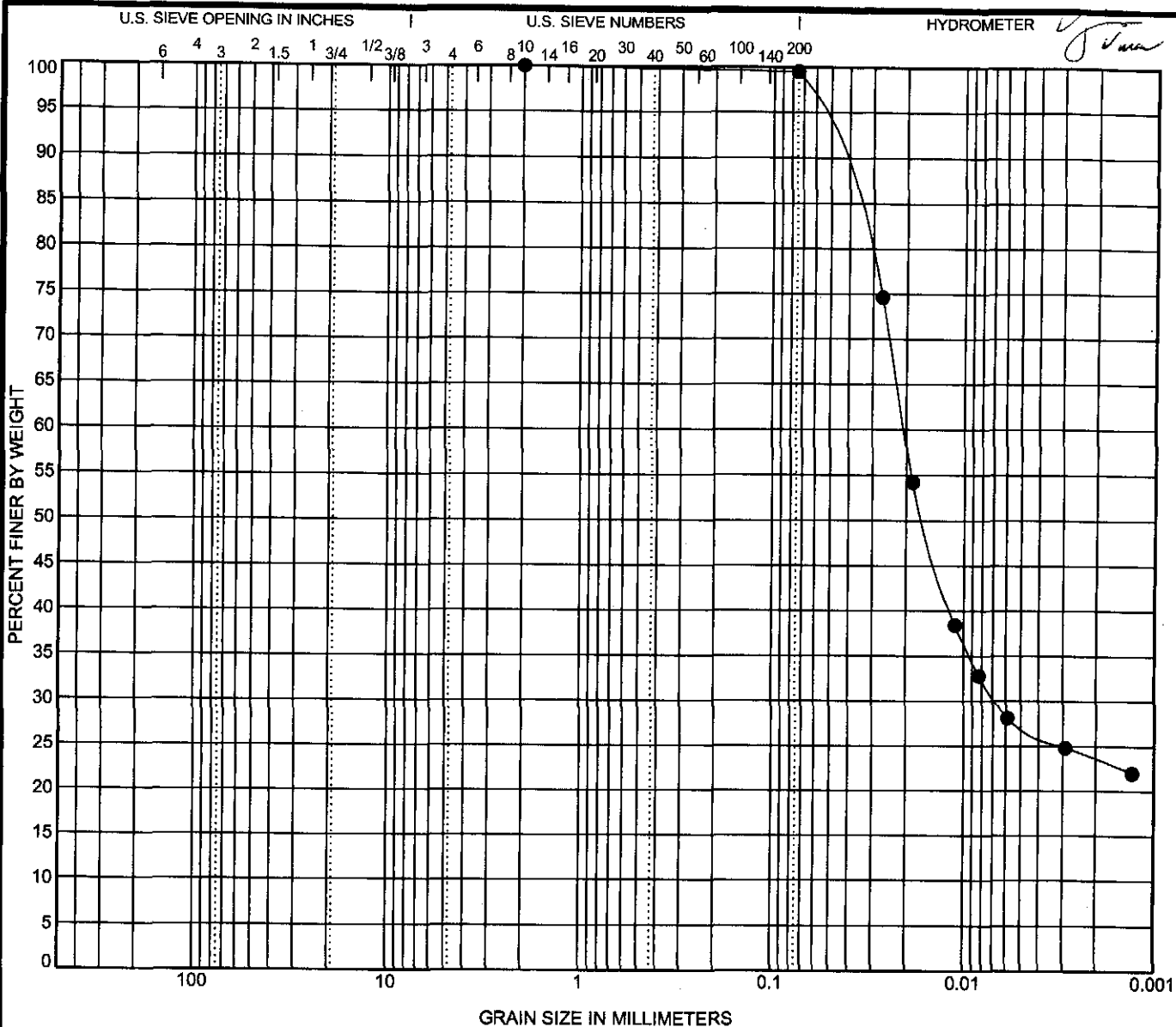
Missouri (314) 770-1001
Illinois (618) 398-1414

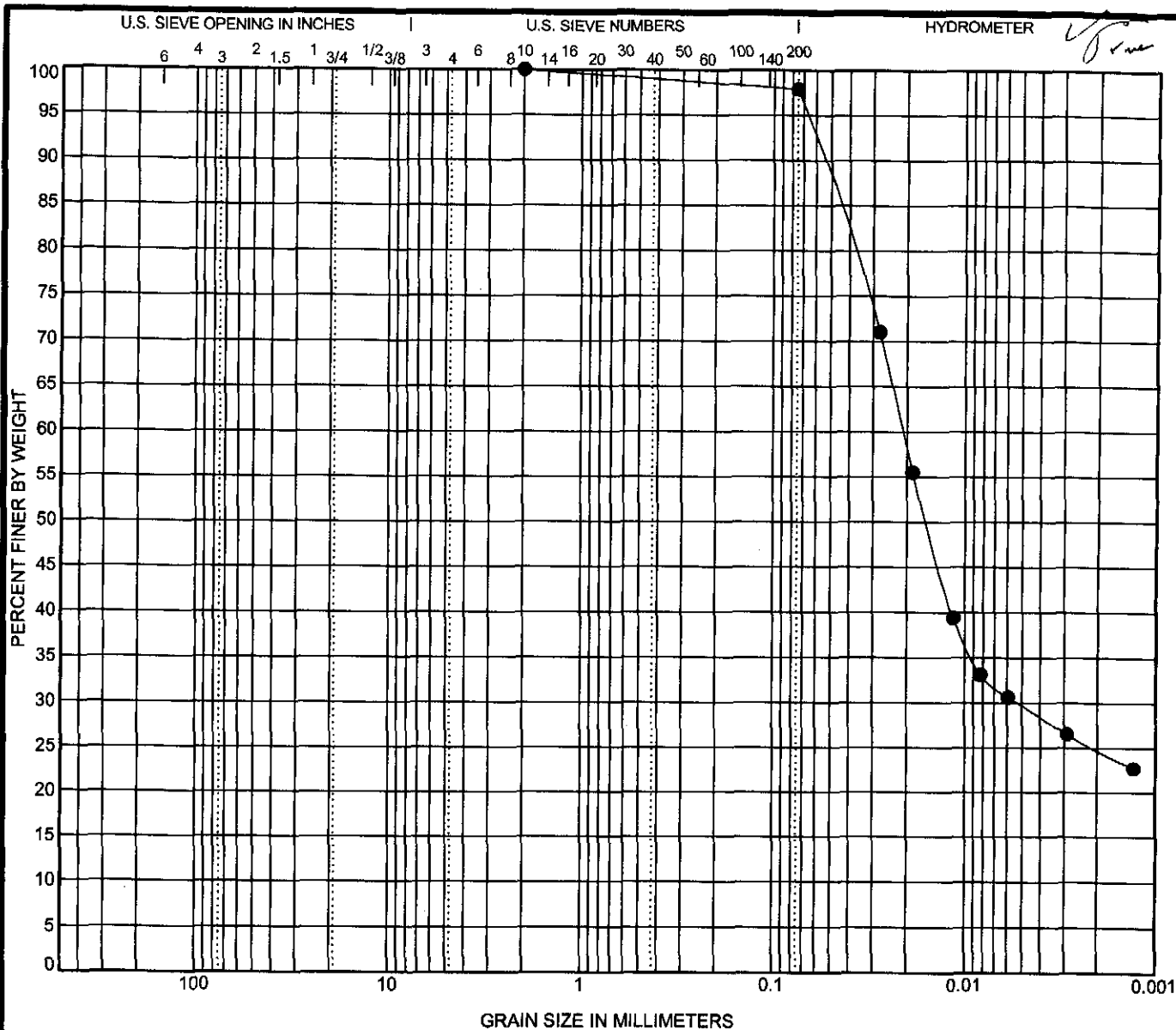
GRAIN SIZE DISTRIBUTION

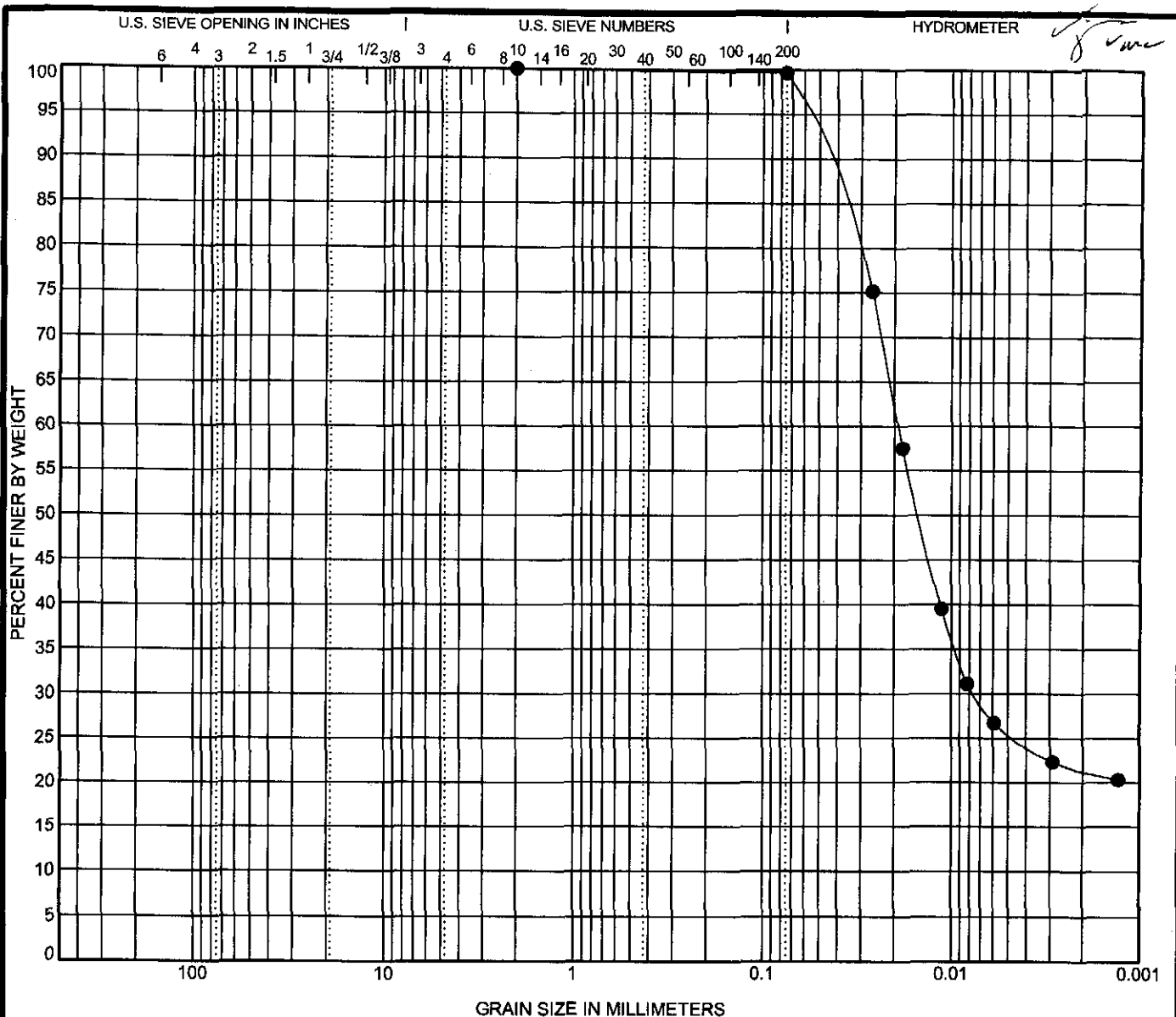
Project Number: SG15-4302

Project: SLOP R1 - 4301 Goodfellow Blvd.

Location: St. Louis, Missouri







| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| Specimen Identification | | Classification | | | | LL | PL | PI | Cc | Cu |
|-------------------------|-----------------------|----------------------|-------|-------|-----|---------|-------|-------|-------|----|
| ● | CB-06-S-13 13.0-15.0' | Brown Silty CLAY, CL | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Specimen Identification | | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay | |
| ● | CB-06-S-13 13.0-15.0' | 2 | 0.019 | 0.008 | | 0.0 | 0.3 | 74.0 | 25.7 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



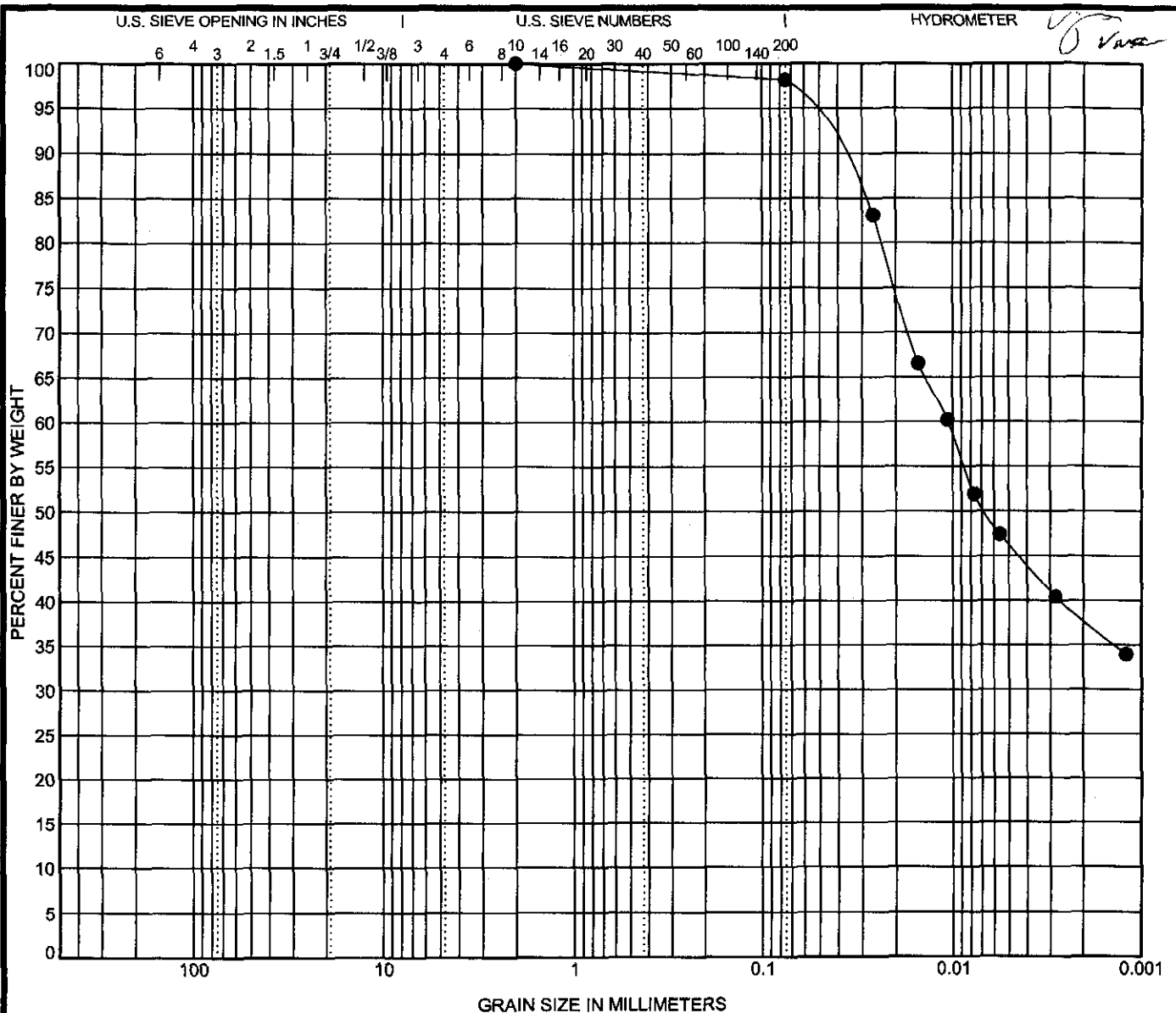
Missouri (314) 770-1001
Illinois (618) 398-1414

GRAIN SIZE DISTRIBUTION

Project Number: SG15-4302

Project: SLOP R1 - 4301 Goodfellow Blvd.

Location: St. Louis, Missouri



| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

[illegible]

Shively

Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

GRAIN SIZE DISTRIBUTION

Project Number: SG15-4302

Project: SLOP R1 - 4301 Goodfellow Blvd.

Location: St. Louis, Missouri

CHAIN OF CUSTODY RECORD

[illegible]

[illegible]

[illegible]



PEL a division of Spectrum Analytical, Inc.

featuring HANIBAL TECHNOLOGY



Customer Name: CH2M Hill
Date and Time Received: 5/14/2008 8:30:00 AM
Date Reported: 5/19/2008
Laboratory Submission Number/SDG: 2509258
Project: SLOP RI / 364298.01.SL.RI.FW

Samples: The submission consisted of 20 samples with sample identification shown in the attached data tables.

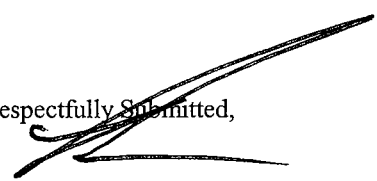
Tests: The samples were analyzed for the methods listed on the attached table of contents.

Results: See the attached data tables for results.

Distribution of Report to:

CH2M Hill
Attn: Dave Lee
Phone: W 314-421-0900

Respectfully Submitted,


Brian Spann
Laboratory Director
PEL a division of Spectrum Analytical, Inc.
featuring Hanibal Technology

Note: Submitted material will be retained for 30 days unless otherwise requested by client or consumed in analysis. PEL letters and reports are for the exclusive use of the client to whom they are addressed. Our Letters and reports apply to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar materials

8405 Benjamin Road, Suite A • Tampa, Florida 33634
813-888-9507 • FAX: 800-480-6435
Website: www.pelab.com

| | |
|---|-----------|
| Inorganics | 5 |
| METALS DATA PACKAGE TOTALS | 8 |
| Sample Data | 12 |
| QC Summary | 31 |
| Chain of Custody Documentation | 51 |
| Addendum | 58 |

EXECUTIVE SUMMARY - Detection Highlights

2509258

SAMPLE ID: FD-S-051308A

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 7.09 | 1.5 | MG/KG | SW6010B |

SAMPLE ID: FD-S-051308B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 9.02 | 0.736 | MG/KG | SW6010B |

SAMPLE ID: HA-01-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 8.82 | 0.866 | MG/KG | SW6010B |

SAMPLE ID: HA-02-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 9.41 | 0.814 | MG/KG | SW6010B |

SAMPLE ID: HA-03-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 10 | 0.873 | MG/KG | SW6010B |

SAMPLE ID: HA-04-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 5.94 | 0.796 | MG/KG | SW6010B |

EXECUTIVE SUMMARY - Detection Highlights

2509258

SAMPLE ID: HA-05-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 36.3 | 0.826 | MG/KG | SW6010B |

SAMPLE ID: HA-06-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 18.2 | 0.835 | MG/KG | SW6010B |

SAMPLE ID: HA-07-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 8.11 | 0.846 | MG/KG | SW6010B |

SAMPLE ID: HA-08-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 7.39 | 0.78 | MG/KG | SW6010B |

SAMPLE ID: HA-09-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 5.9 | 0.789 | MG/KG | SW6010B |

EXECUTIVE SUMMARY - Detection Highlights

2509258

SAMPLE ID: HA-10-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 8.06 | 0.816 | MG/KG | SW6010B |

SAMPLE ID: HA-11-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 9.42 | 1.64 | MG/KG | SW6010B |

SAMPLE ID: HA-12-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 8.41 | 0.892 | MG/KG | SW6010B |

SAMPLE ID: HA-13-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 9.05 | 0.755 | MG/KG | SW6010B |

SAMPLE ID: HA-14-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 8.19 | 0.752 | MG/KG | SW6010B |

SAMPLE ID: HA-15-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 9.14 | 0.856 | MG/KG | SW6010B |

EXECUTIVE SUMMARY - Detection Highlights

2509258

SAMPLE ID: HA-16-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Arsenic | 5.47 | 0.79 | MG/KG | SW6010B |

Inorganics

Inorganic Data Qualifiers

C (Concentration) Qualifier - Entries and their meanings are:

- B** The reported value obtained was less than the RL but greater than or equal to the MDL.
- E** The reported value obtained was over calibration or linear range.
- U** The reported value obtained was less than the MDL or was not detected.

Q Qualifier - Entries and their meanings are:

- U** The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM 1 if it is an isolated problem.
- M** Duplicate injection precision was not met (two analyses of the same sample did not agree).
- N** Spiked sample recovery not within control limits.
- E** Serial Dilution percent difference not within control limits.
- S** The reported value was determined by the Method of Standard Additions (MSA).
- W** Post-digestion spike for Furnace AA analysis is out of control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
- *** Duplicate analysis not within control limits.
- +** Correlation coefficient for the MSA is less than 0.995.
- X** The data is flagged as rejected by analyst utilizing analytical judgement.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

M (Method) Qualifier - Enter one of the following:

- P** ICP
- A** Flame AA
- F** Furnace AA
- CV** Manual Cold Vapor AA
- TC** Total Organic Carbon
- AS** Semi-Automated Spectrophotometric
- CA** Midi-Distillation Spectrophotometric
- T** Titrimetric
- C** Manual Spectrophotometric
- GR** Gravimetric
- NR** Analyte was not required by your lab

Inorganic Sample ID Qualifiers

The qualifiers that may be appended to the lab sample ID and/or the client sample ID for inorganic analysis are defined below:

- DL** Diluted reanalysis. Indicates that the results of the original analysis of the sample contained compounds that exceeded the calibration range. The sample was diluted and reanalyzed. May be followed by a digit to indicate multiple dilutions of the sample. The results of more than one diluted reanalysis may be reported.
- R** Reanalysis. The extract was reanalyzed without re-extraction. The "R" is not used if the sample was also re-extracted. May be followed by a digit to indicate multiple reanalysis of the sample at the same dilution.
- RE** Re-extracted. The extract was reanalyzed with re-extraction. May be followed by a digit to indicate multiple re-extraction of the same sample at the same dilution.
- MS** Matrix spike (may be followed by a digit to indicate multiple matrix within a sample set).
- SD** Matrix spike duplicate (may be followed by a digit to indicate multiple matrix spike duplicate within a sample set).
- A** Post Digestion Spike.
- L** Serial Dilution.

METALS DATA PACKAGE TOTALS

CASE NARRATIVE METALS

PEL Lab Reference No./SDG: 2509258

Client: CH2M Hill

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody or a communication form is included in the addendum with this package.

II. HOLDING TIMES

A. Sample Preparation: All holding times were met.

B. Sample Analysis: All holding times were met.

III. METHOD

Analyses were performed according to the PEL, a Division of Spectrum Analytical, Standard Operating Procedures and EPA Method 6010B for ICP metals.

IV. PREPARATION

Soil samples were prepared according to PEL Laboratory's Standard Operating Procedures and EPA Method 3050B.

V. ANALYSIS

A. Calibration:

All acceptance criteria were met.

B. Blanks:

1. Calibration Blanks:

All acceptance criteria were met.

2. Method Blanks:

All acceptance criteria were met.

C. Spikes:

1. Laboratory Control Spikes (LCS):

An LCS/LCSD set was analyzed.

All percent recovery and relative percent difference (RPD) criteria were met.

2. Post Digestion Spike:

All acceptance criteria were met.

**CASE NARRATIVE
METALS**

PEL Lab Reference No./SDG: 2509258

Client: CH2M Hill

3. Matrix Spike/Matrix Spike Duplicate Samples (MS/SD):

A client requested MS/SD set was analyzed.
All percent recovery and relative percent difference (RPD) criteria were met.

D. Duplicate:

No sample duplicates are reported with this method. (Spike duplicates are referenced above in section C. Spikes.)

E. Serial Dilution:

All acceptance criteria were met.

F. ICP Interference Check Samples:

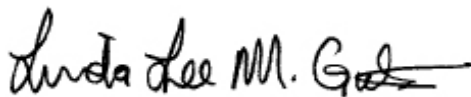
All acceptance criteria were met.

G. Samples:

Sample analysis proceeded normally.

Samples FD-S-051308A, HA-11-S-00 required a 1:2 dilution due to interference with the following analyte(s): Arsenic.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and PEL, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as, verified by the following signature.



SIGNED:

DATE: 05/15/2008

U.S. EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.
 Lab Code : PEL Case No.: _____ SDG No.: 2509258
 SOW No.: _____

| EPA Sample No | Lab Sample ID |
|----------------------|----------------------|
| HA-01-S-00 | 250925801 |
| HA-03-S-00 | 250925802 |
| HA-02-S-00 | 250925805 |
| HA-05-S-00 | 250925806 |
| HA-04-S-00 | 250925807 |
| HA-06-S-00 | 250925808 |
| HA-07-S-00 | 250925809 |
| HA-08-S-00 | 250925810 |
| HA-09-S-00 | 250925811 |
| FD-S-051308A | 250925812 |
| HA-11-S-00 | 250925813 |
| HA-12-S-00 | 250925814 |
| FD-S-051308B | 250925815 |
| HA-13-S-00 | 250925816 |
| HA-14-S-00 | 250925817 |
| HA-15-S-00 | 250925818 |
| HA-16-S-00 | 250925819 |
| HA-10-S-00 | 250925820 |

Were ICP interelement corrections applied? Yes/No Yes

Were ICP background corrections applied? Yes/No Yes

If yes - were raw data generated before
 application of background corrections? Yes/No No

Comments:

Sample Data

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-01-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925801Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 79.7 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.82 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-02-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925805Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 82.2 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.41 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-05-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925806Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 82 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 36.3 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-04-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925807Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 84.2 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.94 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

2509258

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-06-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925808Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 79.6

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 18.2 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-07-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925809Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 80.3 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.11 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-09-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925811Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 80.9 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.9 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

2509258

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

FD-S-051308A

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925812Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 85.3 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 7.09 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-11-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925813Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 83.9

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.42 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-12-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925814Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 78.7 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.41 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

2509258

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

FD-S-051308B

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925815Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 83.1

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.02 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-13-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925816Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 80.9

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.05 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-14-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925817Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 80.9

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.19 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

2509258

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-15-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925818Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 80.6

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.14 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-16-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925819Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 81.8

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.47 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-10-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509258Matrix: SOIL Lab Sample ID: 250925820Level:(low/med) LOW Date Received: 5/14/2008PercentSolids: 85.6

Station ID: _____

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.06 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

QC Summary

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 Initial Calibration Source: 23085

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|---------|--------|------------------------|---------|--------|---------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Arsenic | 400 | 392.000 | 98.0 | 500 | 507.000 | 101.4 | 514.000 | 102.8 | P |

ICV IDs: P= ICV604536

CCV1 IDs: P= CCV604541

CCV2 IDs: P= CCV604553

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1026

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 Initial Calibration Source:

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|-------|--------|------------------------|---------|--------|---------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Arsenic | | | | 500 | 521.000 | 104.2 | 522.000 | 104.4 | P |

ICV IDs:

CCV1 IDs: P= CCV604566

CCV2 IDs: P= CCV604567

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1026

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 Initial Calibration Source:

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|-------|--------|------------------------|---------|--------|---------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Arsenic | | | | 500 | 524.000 | 104.8 | 529.000 | 105.8 | P |

ICV IDs:

CCV1 IDs: P= CCV604579

CCV2 IDs: P= CCV604591

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1026

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 Preparation Blank Matrix (water/soil): SOIL
 Preparation Blank Concentration Units (ug/L or mg/Kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|---|---|---|-------------------|---|---|
| | | C | C | | C | | C | | C | | |
| Arsenic | 5 | U | 5 | U | 5 | U | 5 | U | 0.5 | U | P |

ICB IDs: P= ICB604537

CCB1 IDs: P= CCB604542

CCB2 IDs: P= CCB604554

CCB3 IDs: P= CCB604555

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Preparation Blank Matrix (water/soil):

Preparation Blank Concentration Units (ug/L or mg/Kg):

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|---|---|---|-------------------|--|---|
| | | C | C | | C | | C | | C | | |
| Arsenic | | | 5 | U | 5 | U | 5 | U | | | P |

ICB IDs:

CCB1 IDs: P= CCB604568

CCB2 IDs: P= CCB604580

CCB3 IDs: P= CCB604592

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 ICP ID#: ICAP2 ICSA Source: 23556
 ICSAB Source: 23557

Concentration Units: UG/L

| Analyte | True | | Initial Found | | | Final Found | | |
|---------|------|------|---------------|--------|------|-------------|------|----|
| | Sol. | Sol. | Sol. | Sol. | | Sol. | Sol. | |
| | A | AB | A | AB | %R | A | AB | %R |
| Arsenic | 0 | 100 | 0.828 | 99.283 | 99.3 | | | |

ICSA: ICS604539

ICSAB: ICS604540

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.

HA-03-S-00MS

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Arsenic | 75 - 125 | 52 | | 10 | | 43.9 | 95.7 | | P |

Comments:

190508 1026

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.

HA-03-S-00SD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Matrix: SOIL Level:(low/med) LOW

% Solids for Sample: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Arsenic | 75 - 125 | 49.8 | | 10 | | 43.7 | 91.1 | | P |

Comments:

190508 1026

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5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.

HA-03-S-00A

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258Matrix: Soil Level:(low/med) LOWConcentration Units (ug/L or mg/kg): ug/L

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Arsenic | 80 - 120 | 602.00 | | 114.60 | | 500 | 97.6 | | P |

Comments:

190508 1026

U.S. EPA - CLP

6

DUPLICATES

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.F

262202LCSD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 100

% Solids for Duplicate: 100

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|------------------|------------|---|---------------|---|-----|---|---|
| Arsenic | 20 | 48.4 | | 49.2 | | 1.6 | | P |

Comments:

190508 1026

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6

DUPLICATES

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.F

HA-03-S-00SD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 80.3

% Solids for Duplicate: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|------------------|------------|---|---------------|---|-----|---|---|
| Arsenic | 20 | 52 | | 49.8 | | 4.3 | | P |

Comments:

190508 1026

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.

262201LCS

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|---|-----|------|
| | True | Found | %R | True | Found | C | Limits | | | %R |
| Arsenic | | | | 50 | 48.4 | | 80 | - | 120 | 96.8 |

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7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.

262202LCSD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|---|-----|------|
| | True | Found | %R | True | Found | C | Limits | | | %R |
| Arsenic | | | | 50 | 49.2 | | 80 | - | 120 | 98.4 |

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9
SERIAL DILUTIONS

EPA Sample No. HA-03-S-00L

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.F

Lab Code : PEL Case No.: SAS No: SDG No.: 2509258

Matrix: Soil Level:(low/med) LOW

Concentration Units (ug/L or mg/kg): ug/L

| Analyte | Initial Sample Result (I) | | Serial Dilution Result (S) | C | % Difference | Q | M |
|---------|---------------------------|---|----------------------------|---|--------------|---|---|
| | | C | | C | | | |
| Arsenic | 114.60 | | 113.00 | | 1.4 | | P |

Comments:

190508 1026

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10

METHOD DETECTION LIMITS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 ICP ID Number : ICAP2
 Furnace AA ID Number :

| Analyte | Wave-length (nm) | Raw MDL (UG/L) | CRDL (MG/KG) | MDL (MG/KG) | Verification Date | M |
|---------|------------------|----------------|--------------|-------------|-------------------|---|
| Arsenic | 188.979 | 5 | 1 | 0.5 | 4/24/2008 | P |

Comments:

190508 1026

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12

ICP LINEAR RANGES (SEMI-ANNUALLY)

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
 ICP ID NUMBER : ICAP2 DATE : 10/31/2007

| Analyte | Integ. Time (sec.) | Concentration UG/L | M |
|---------|--------------------------|-----------------------|---|
| Arsenic | 0 | 5000 | P |

Comments:

190508 1026

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PREPARATION LOG

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW
Lab Code : PEL Case No.: SAS No: SDG No.: 2509258
Method : 6010

| EPA Sample No: | Preparation Date | Weight (gram) | Volume (mL) |
|----------------------|---------------------|------------------|----------------|
| 262200BLK | 14 May 08 | 0.5 | |
| 262201LCS | 14 May 08 | 0.5 | |
| 262202LCSD | 14 May 08 | 0.5 | |
| FD-S-051308A | 14 May 08 | 0.779 | |
| FD-S-051308B | 14 May 08 | 0.817 | |
| HA-01-S-00 | 14 May 08 | 0.724 | |
| HA-02-S-00 | 14 May 08 | 0.747 | |
| HA-03-S-00 | 14 May 08 | 0.713 | |
| HA-03-S-00MS | 14 May 08 | 0.709 | |
| HA-03-S-00SD | 14 May 08 | 0.712 | |
| HA-04-S-00 | 14 May 08 | 0.746 | |
| HA-05-S-00 | 14 May 08 | 0.738 | |
| HA-06-S-00 | 14 May 08 | 0.752 | |
| HA-07-S-00 | 14 May 08 | 0.736 | |
| HA-08-S-00 | 14 May 08 | 0.799 | |
| HA-09-S-00 | 14 May 08 | 0.783 | |
| HA-10-S-00 | 14 May 08 | 0.716 | |
| HA-11-S-00 | 14 May 08 | 0.727 | |
| HA-12-S-00 | 14 May 08 | 0.712 | |
| HA-13-S-00 | 14 May 08 | 0.819 | |
| HA-14-S-00 | 14 May 08 | 0.822 | |
| HA-15-S-00 | 14 May 08 | 0.725 | |
| HA-16-S-00 | 14 May 08 | 0.774 | |

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14

ANALYSIS RUN LOG

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

Lab Code: PEL Case No.: SAS No: SDG No.: 2509258

Instrument ID Number: ICAP2 Method: P

Start Date: 5/15/2008 End Date: 5/15/2008

| EPA Sample No. | D/F | Time | %R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------|----|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | A G | A L | A S | B A | B E | C A | C D | C N | C O | C R | C U | F E | H G | K | L I | M G | M N | M O | N A | N I | P B | S B | S E | S N | S R | T I | T L | V L |
| CAL01 | 1 | 11:21 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL02 | 1 | 11:26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL03 | 1 | 11:30 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL04 | 1 | 11:35 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL05 | 1 | 11:39 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL06 | 1 | 11:43 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICV604536 | 1 | 11:56 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICB604537 | 1 | 12:00 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1 | 12:04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICSA | 1 | 12:09 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICSAB | 1 | 12:14 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604541 | 1 | 12:19 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604542 | 1 | 12:23 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 262200BLK | 1 | 12:27 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 262201LCS | 1 | 12:31 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 262202LCSD | 1 | 12:35 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-03-S-00 | 1 | 12:40 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-03-S-00L | 5 | 12:44 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-03-S-00MS | 1 | 12:48 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-03-S-00SD | 1 | 12:52 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-03-S-00A | 1 | 12:57 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-02-S-00 | 1 | 13:01 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-05-S-00 | 1 | 13:05 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604553 | 1 | 13:10 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604554 | 1 | 13:16 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604555 | 1 | 13:19 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-04-S-00 | 1 | 13:23 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-06-S-00 | 1 | 13:27 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-07-S-00 | 1 | 13:32 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-08-S-00 | 1 | 13:36 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-09-S-00 | 1 | 13:41 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1 | 13:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1 | 13:49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-12-S-00 | 1 | 13:54 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| FD-S-051308B | 1 | 13:58 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-13-S-00 | 1 | 14:03 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

Lab Code: PEL Case No.: SAS No: SDG No.: 2509258

Instrument ID Number: ICAP2 Method: P

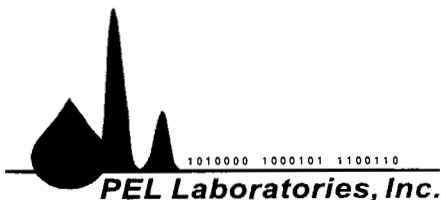
Start Date: 5/15/2008 End Date: 5/15/2008

| EPA Sample No. | D/F | Time | %R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------|----|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | A G | A L | A S | B A | B E | C A | C D | C N | C O | C R | C U | F E | H G | K I | L I | M G | M N | M O | N A | N I | P B | S B | S E | S N | S R | T I | T L | V L |
| CCV604566 | 1 | 14:07 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604567 | 1 | 14:10 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604568 | 1 | 14:13 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-14-S-00 | 1 | 14:17 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-15-S-00 | 1 | 14:21 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-16-S-00 | 1 | 14:26 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-10-S-00 | 1 | 14:30 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-01-S-00 | 1 | 14:34 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 14:40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 14:44 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 14:48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 14:52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FD-S-051308A | 2 | 14:56 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604579 | 1 | 15:01 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604580 | 1 | 15:06 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| HA-11-S-00 | 2 | 15:14 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 10 | 15:22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 20 | 15:26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:39 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 15:47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1 | 15:52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604591 | 1 | 15:56 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB604592 | 1 | 16:01 | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |

Chain of Custody Documentation

Chain of Custody Record Record/Work Request

8405 Benjamin Rd, Suite A
Tampa, FL 33634
Phone: 813-888-9507
E-Mail: login@pelab.com



2509258 KC

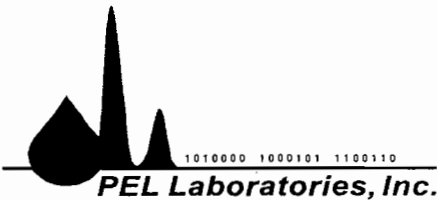
| | | | | | | | | | | | |
|--|---------------|----------------------|------|---|--------------------|--------------------------------|---------|--|---------|---------------------------|--|
| Company: CH2M HILL | | | | Project Name/Number: SLOP RI 364298.01.SL.RI.FW | | | | Page of 3 | | | |
| Address: 727 N. First St., Suite 400 St. Louis, MO 63102 | | | | Project Manager: CHRIS ENGLISH | | | | DEP Form #: 62-770.900(2) Form Title: Chain of Custody Record Effective Date: September 23, 1997 FDEP Facility No. | | | |
| Phone: 314-335-3000 Fax: 314-421-3927 | | | | Purchase Order: | | | | Project Name: | | | |
| Print Names(s) / Affiliation Anthony Swierczek, Glyn Roberts, Wayne Conway / CH2M HILL | | | | Preservatives (see codes) I I | | | | Sampling CompQAP No: | | | |
| Sampler(s) Signature(s) | | | | Analyses Requested | | | | Approval Date: | | | |
| REQUESTED DUE DATE / / | | | | | | | | | | | |
| Remarks | | | | Lab. No. | | | | | | | |
| Item No. | Field ID No. | Sampled Date Time | | Grab or Composite | Matrix (see codes) | Number of Containers | Arsenic | Lead | Mercury | | |
| 1 | HA-01-S-00 | 05/13/08 | 1030 | Composite | SO | 2 | X | X | | 24-HR TAT 01 | |
| 2 | HA-03-S-00 | 05/13/08 | 1150 | | SO | 2 | X | X | | 02 | |
| 3 | HA-03-S-00 MS | 05/13/08 | 1150 | | SO | 1 | X | | | 03 | |
| 4 | HA-03-S-00-SD | 05/13/08 | 1150 | | SO | 1 | X | | | 04 | |
| 5 | HA-02-S-00 | 05/13/08 | 1155 | | SO | 2 | X | X | | 05 | |
| 6 | HA-05-S-00 | 05/13/08 | 1335 | | SO | 2 | X | X | | 06 | |
| 7 | HA-04-S-00 | 05/13/08 | 1400 | | SO | 2 | X | X | | 07 | |
| 8 | HA-06-S-00 | 05/13/08 | 1415 | | SO | 2 | X | X | | 08 | |
| 9 | HA-07-S-00 | 05/13/08 | 1417 | | SO | 2 | X | X | | 09 | |
| Shipment Method | | | | Total Number of Containers | | | | | | | |
| Out: 5/13/08 | | Via: FedEx | | Item Nos. | | Relinquished by / Affiliations | | Date Time | | Accepted by / Affiliation | |
| Returned: / / | | Via. | | | | | | 5/16/08 1446 | | | |
| Additional Comments: Please HOLD | | | | | | | | 5/13/08 1600 | | 1000 1000 1000 | |
| TCLP analyses for all samples on this COL until Arsenic data is received; will run the 5 highest arsenic locations for TCLP analyses for 10-day TAT. | | | | Cooler No. (s) / Temperature(s) (C) 4.0C | | | | Sampling Kit No. | | Equipment ID No. | |
| MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify) | | | | | | | | | | | |
| PRESERVATION CODES: H-Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) | | | | | | | | | | | |

2509258

52

Chain of Custody Record Record/Work Request

8405 Benjamin Rd, Suite A
Tampa, FL 33634
Phone: 813-888-9507
E-Mail: login@pelab.com

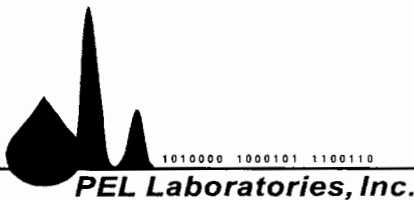


2509258 KC

| | | | | | | | | | | | |
|---|--------------|-------------------|--------------|---|--------------------|--------------------------------|--|--|------------------|---------------------------|--|
| Company: CH2M HILL | | | | Project Name/Number: SLOP RI / 364298.01-SL.RI.FW | | | | Page 2 of 3 | | | |
| Address: 727 N. F. 2nd St., Suite 400 St. Louis, MO 63102 | | | | Project Manager: CHRIS ENGLISH | | | | DEP Form #: 62-770.900(2) Form Title: <u>Chain of Custody Record</u> Effective Date: <u>September 23, 1997</u> FDEP Facility No. Project Name: | | | |
| Phone: 314-335-3000 Fax: 314-421-3927 | | | | Purchase Order: | | | | Sampling CompQAP No: Approval Date: | | | |
| Print Names(s) / Affiliation Anthony Swierczek, Glyn Roberts, Wayne Conway / CH2M HILL | | | | | | | Preservatives (see codes) II | | | REQUESTED DUE DATE / / | |
| Sampler(s) Signature(s) <i>[Signature]</i> | | | | | | | Analyses Requested | | | REMARKS | |
| Item No. | Field ID No. | Sampled Date | Sampled Time | Grab or Composite | Matrix (see codes) | Number of Containers | Arsenic | TCAP | Methods | Lab. No. | |
| 10 | HA-08-S-00 | 05/13/08 | 1430 | Composite | SO | 2 | X | X | | 24-HR TAT | |
| 11 | HA-09-S-00 | 05/13/08 | 1512 | | SO | 2 | X | X | | 11 | |
| 12 | FD-S-051308A | 05/13/08 | 1515 | | SO | 1 | X | | | 12 | |
| 13 | HA-11-S-00 | 05/13/08 | 1540 | | SO | 2 | X | X | | 13 | |
| 14 | HA-12-S-00 | 05/13/08 | 1548 | | SO | 2 | X | X | | 14 | |
| 15 | FD-S-051308B | 05/13/08 | 1545 | | SO | 1 | X | | | 15 | |
| 16 | HA-13-S-00 | 05/13/08 | 1602 | | SO | 2 | X | X | | 16 | |
| 17 | HA-14-S-00 | 05/13/08 | 1607 | | SO | 2 | X | X | | 17 | |
| 18 | HA-15-S-00 | 05/13/08 | 1616 | | SO | 2 | X | X | | 18 | |
| Shipment Method | | | | | | | Total Number of Containers | | | | |
| Out: 5/13/08 | | Via: FedEx | | Item Nos. | | Relinquished by / Affiliations | | Date | | Accepted by / Affiliation | |
| Returned: / / | | Via: | | | | <i>[Signature]</i> | | 5/16/08 1446 | | | |
| Additional Comments: Please HOLD | | | | | | <i>[Signature]</i> | | 5/13/08 1800 | | 1120 | |
| <p>TCAP analyses for all samples on COC until Arsenic data is received; will run the 5 highest arsenic locations for TCAP analyses for 10-day TAT.</p> | | | | | | | | | | | |
| Cooler No. (s) / Temperature(s) (C) | | | | | | | Sampling Kit No. | | Equipment ID No. | | |
| <p>MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)</p> <p>PRESERVATION CODES: H-Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify)</p> | | | | | | | | | | | |

2509258

53



Chain of Custody Record Record/Work Request

8405 Benjamin Rd, Suite A
Tampa, FL 33634
Phone: 813-888-9507
E-Mail: login@pelab.com

2509258 KC

| | | | | | | | | | | | | | |
|---|--|---|--|-----------|--|--|--|---------------------|--|---------------------------|--|--------------------|--|
| Company: CAZM HILL | | Project Name/Number: SOP II / 364298.01. SL. RI. FW | | | | Page 3 of 3 | | | | | | | |
| Address: 727 N. First St., Suite 400 St. Louis, MO 63102 | | Project Manager: CHRIS ENGLISH | | | | DEP Form #: 62-770.900(2) Form Title: Chain of Custody Record Effective Date: September 23, 1997 FDEP Facility No. | | | | | | | |
| Phone: 314-335-3000 Fax: 314-421-3927 | | Purchase Order: | | | | Project Name: | | | | | | | |
| Print Names(s) / Affiliation Anthony Swierczek, John Roberts, Wayne Conway | | | | | | Preservatives (see codes) I I | | | | | | | |
| Sampler(s) Signature(s) | | | | | | Analyses Requested | | | | | | | |
| Requested Due Date: / / | | | | | | Approval Date: | | | | | | | |
| Item No. Field ID No. Sampled Date Time Grab or Composite Matrix (see codes) Number of Containers | | | | | | Remarks Lab. No. | | | | | | | |
| 19 HA-16-S-00 05/13/08 1625 Composite SO 2 | | | | | | 24-Hr TAT 19 | | | | | | | |
| 20 HA-10-S-00 05/13/08 1635 ↓ SO 2 | | | | | | 20 | | | | | | | |
| Shipment Method | | | | | | ← Total Number of Containers | | | | | | | |
| Out: 05/13/08 | | Via: FedEx | | Item Nos. | | Relinquished by / Affiliations | | Date Time | | Accepted by / Affiliation | | Date Time | |
| Returned: / / | | Via: | | | | | | 5/16/08 1446 | | | | 5/16/08 830 | |
| Additional Comments: Please HOLD | | | | | | | | | | | | | |
| TCLP analyses for all samples on CCL until Arsenic data is received; will run the 5 highest arsenic locations for TCLP analyses for 10-day TAT. | | | | | | | | | | | | | |
| Cooler No. (s) / Temperature(s) (C) | | | | | | Sampling Kit No. | | Equipment ID No. | | | | | |
| MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify) | | | | | | | | | | | | | |
| PRESERVATION CODES: H-Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) | | | | | | | | | | | | | |

2509258

54

1 From

Date 2/1/04

Sender's Name 6444 Bldg Phone 304 921-1144

Company CALVIN

Address 711 W. F. 117

City ST. LOUIS State MO ZIP 63104

2 Your Internal Billing Reference 36429801, SL, RI, FW/41500

3 To

Recipient's Name Supr. Admin. Phone 314 883-1477

Company AB

Recipient's Address 8145 Romaine Blvd

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Dept./Floor/Suite/Room

To request a package be held at a specific FedEx location, print FedEx address here.

City St. Louis State MO ZIP 63104



8627 4831 7199

4a Express Package Service

☒ **FedEx Priority Overnight**
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ **FedEx Standard Overnight**
Next business afternoon.* Saturday Delivery NOT available.

☐ **FedEx First Overnight**
Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

☐ **FedEx 2Day**
Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ **FedEx Express Saver**
Third business day.* Saturday Delivery NOT available.

* To most locations.

4b Express Freight Service

☐ **FedEx 1Day Freight***
Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ **FedEx 2Day Freight**
Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ **FedEx 3Day Freight**
Third business day.** Saturday Delivery NOT available.

* Call for Confirmation: ** To most locations.

5 Packaging

☐ **FedEx Envelope***

☐ **FedEx Pak***
Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.

☐ **FedEx Box**

☐ **FedEx Tube**

☒ **Other**
* Declared value limit \$500.

6 Special Handling

Include FedEx address in Section 3.

☐ **SATURDAY Delivery**
Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

☐ **HOLD Weekday at FedEx Location**
Not available for FedEx First Overnight.

☐ **HOLD Saturday at FedEx Location**
Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods?
One box must be checked.

☒ **No** ☐ **Yes** As per attached Shipper's Declaration. ☐ **Yes** Shipper's Declaration not required.

☐ **Dry Ice**
Dry Ice, 9, UN 1845 x kg

☐ **Cargo Aircraft Only**

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

7 Payment

Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☒ **Sender** Acct. No. in Section 1 will be billed.

☐ **Recipient** ☐ **Third Party** ☐ **Credit Card** ☐ **Cash/Check**

Total Packages 1001 **Total Weight** 161 **Total Declared Value*** \$ 00

*Our liability is limited to \$100 unless you declare a higher value. See back for details. Credit Card Auth.

8 Residential Delivery Signature Options

If you require a signature, check Direct or Indirect.

☐ **No Signature Required***
Package may be left without obtaining a signature for delivery.

☐ **Direct Signature**
Someone at recipient's address may sign for delivery. Fee applies.

☐ **Indirect Signature**
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies.

520

SAMPLE RECEIPT CONFIRMATION SHEET

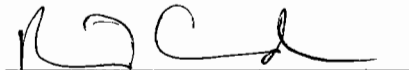
Client Information

| | | | |
|------------|-----------|-------------|----------------------|
| SDG: | 2509258 | Req: | 85624 |
| Client: | CH2M Hill | Project: | Hanley Area |
| Level: | 3 | Date Rec'd: | 5/14/2008 8:30:00 AM |
| Rec'd via: | Fed-Ex | Due Date: | 05/15/08 |

Sample Verification

| | | | |
|-----------------------------------|---------------------------------------|-----------------------------------|-----------------------------------|
| Samples/Cooler Secure? | <input type="text" value="Yes"/> | All Samples on COC accounted For? | <input type="text" value="Yes"/> |
| Temperature of Samples(Celsius) | <input type="text" value="4.0C"/> | All Samples Rec'd Intact? | <input type="text" value="Yes"/> |
| pH Verified? | <input type="text" value="No"/> | Sample Vol. Stuff. For Analysis? | <input type="text" value="Yes"/> |
| pH WNL? | <input type="text" value="No"/> | Samples Rec'd W/I Hold Time? | <input type="text" value="Yes"/> |
| Soil Origin (Domestic/Foreign): | <input type="text" value="Domestic"/> | Are All Samples to be Analyzed? | <input type="text" value="Yes"/> |
| Site Location/Project on COC? | <input type="text" value="Yes"/> | Correct Sample Containers? | <input type="text" value="Yes"/> |
| Client Project # on COC? | <input type="text" value="Yes"/> | COC Comments written on COC? | <input type="text" value="Yes"/> |
| Project Mgr. Indicated on COC? | <input type="text" value="Yes"/> | Samplers Initials on COC? | <input type="text" value="Yes"/> |
| COC relinquished/Dated by Client? | <input type="text" value="Yes"/> | Sample Date/Time Indicated? | <input type="text" value="Yes"/> |
| COC Received/Dated by PEL? | <input type="text" value="Yes"/> | TAT Requested: | <input type="text" value="RUSH"/> |
| Specific Subcontract Indicated? | <input type="text" value="No"/> | Client Requests Verbal Results? | <input type="text" value="No"/> |
| Samples Received By | <input type="text" value="Fed-Ex"/> | Client Requests Faxed Results? | <input type="text" value="No"/> |
| PEL to Conduct ALL Analyses? | <input type="text" value="Yes"/> | | |

PEER REVIEW



Client: CH2M Hill

WONo: 2509258

Profile Name: SLOP2

Profile #: 85624

MATRIX S

| Sample # | Parameter | Relinquished | Received | Date | Time |
|----------|-----------------------|--------------|----------|---------|------|
| 01 - 20 | Dry Weight Dry Weight | KL | PL | 5/14/08 | 1355 |
| 01 - 20 | Dry Weight Dry Weight | PL | KL | 5/14/08 | 1600 |
| 01 - 20 | 6010 Metals | KL | JK | 5/14/8 | 1245 |
| 01 - 20 | 6010 Metals | JK | KL | 5/14/8 | 1355 |

Additional:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments:

Addendum

Letter of Acceptance

Customer Name: CH2M Hill

Date and Time Received: 5/14/2008 8:30:00 AM

Date to be Reported: 5/15/2008 (prelims)

Laboratory Submission Number/SDG: 2509258

Get Detailed Analyte List here: www.pelab.com/webdms/Default.asp?LoaSDG=2509258

Project: SLOP RI / 364298.01.SL.RI.FW

Samples: The submission consisted of 20 samples with sample identification shown in the attached data tables.

Tests: The Samples will be analyzed for EPA methods: 6010.

Sample Custody/COC discrepancies:
None.

Notes:
24-hr TAT, prelims.

Distribution of Report to:

CH2M Hill
Attn: Dave Lee
Phone: W 314-421-0900

Note: Submitted material will be retained for 30 days unless otherwise requested by client or consumed in analysis. PEL letters and reports are for the exclusive use of the client to whom they are addressed. Our letters and reports apply to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar materials

Log-in Report

Level: 3

Total of: 20 analyses on 20 samples (including QC)

15-May-08

Report/SDG #: 2509258

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|-----------------------|----------------------|
| HA-01-S-00 | 250925801 | | SO | 5/13/2008 10:30:00 AM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|-----------------------|----------------------|
| HA-03-S-00 | 250925802 | | SO | 5/13/2008 11:50:00 AM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|--------------|-----------|-----------|--------|-----------------------|----------------------|
| HA-03-S-00MS | 250925803 | | SQ | 5/13/2008 11:50:00 AM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|--------------|-----------|-----------|--------|-----------------------|----------------------|
| HA-03-S-00SD | 250925804 | | SQ | 5/13/2008 11:50:00 AM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|-----------------------|----------------------|
| HA-02-S-00 | 250925805 | | SO | 5/13/2008 11:55:00 AM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|----------------------|----------------------|
| HA-05-S-00 | 250925806 | | SO | 5/13/2008 1:35:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

Report/SDG #: 2509258

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-04-S-00 | 250925807 | | SO | 5/13/2008 2:00:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-06-S-00 | 250925808 | | SO | 5/13/2008 2:15:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-07-S-00 | 250925809 | | SO | 5/13/2008 2:17:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-08-S-00 | 250925810 | | SO | 5/13/2008 2:30:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-09-S-00 | 250925811 | | SO | 5/13/2008 3:12:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| FD-S-051308A | 250925812 | | SO | 5/13/2008 3:15:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

Report/SDG #: 2509258

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-11-S-00 | 250925813 | | SO | 5/13/2008 3:40:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-12-S-00 | 250925814 | | SO | 5/13/2008 3:48:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| FD-S-051308B | 250925815 | | SO | 5/13/2008 3:45:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-13-S-00 | 250925816 | | SO | 5/13/2008 4:02:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-14-S-00 | 250925817 | | SO | 5/13/2008 4:07:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-15-S-00 | 250925818 | | SO | 5/13/2008 4:16:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

Report/SDG #: 2509258

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-16-S-00 | 250925819 | | SO | 5/13/2008 4:25:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|-----------------|---------------|------------------|---------------|----------------------|----------------------|
| HA-10-S-00 | 250925820 | | SO | 5/13/2008 4:35:00 PM | 5/14/2008 8:30:00 AM |

Method

6010

Metals

6010

Darcy Weisman

From: Darcy Weisman
Sent: Thursday, May 15, 2008 5:16 PM
To: 'Dave.Lee@ch2m.com'
Subject: SLOP / SDG 2509258 / prelims

Good afternoon Dave.
Please see attached.

Samples FD-S-051308A, HA-11-S-00 required a 1:2 dilution due to interference with the following analyte(s): Arsenic.

Please note our address has changed:

8405 Benjamin Road, Suite A
Tampa, FL 33634

Thanks,
Darcy

Darcy Weisman
Project Manager, Tampa Division
PEL, a Division of Spectrum Analytical Featuring Hanibal Technology
phone/cell: 813-476-2481
fax: 800-480-6435
email: dweisman@pelab.com

This e-mail is intended for the named addressee(s) and may contain information that is confidential and proprietary. If this information is received by anyone other than the named addressee(s), the recipient(s) should immediately notify the sender by e-mail and promptly delete the transmitted material. In no event shall this material be read, used, stored, or retained by anyone other than the named addressee(s) without the express written consent of the sender or the named addressee(s).

CASE NARRATIVE METALS

PEL Lab Reference No./SDG: 2509258

Client: CH2M Hill

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody or a communication form is included in the addendum with this package.

II. HOLDING TIMES

A. Sample Preparation: All holding times were met.

B. Sample Analysis: All holding times were met.

III. METHOD

Analyses were performed according to the PEL, a Division of Spectrum Analytical, Standard Operating Procedures and EPA Method 6010B for ICP metals.

IV. PREPARATION

Soil samples were prepared according to PEL Laboratory's Standard Operating Procedures and EPA Method 3050B.

V. ANALYSIS

A. Calibration:

All acceptance criteria were met.

B. Blanks:

1. Calibration Blanks:

All acceptance criteria were met.

2. Method Blanks:

All acceptance criteria were met.

C. Spikes:

1. Laboratory Control Spikes (LCS):

An LCS/LCSD set was analyzed.

All percent recovery and relative percent difference (RPD) criteria were met.

2. Post Digestion Spike:

All acceptance criteria were met.

**CASE NARRATIVE
METALS**

PEL Lab Reference No./SDG: 2509258

Client: CH2M Hill

3. Matrix Spike/Matrix Spike Duplicate Samples (MS/SD):

A client requested MS/SD set was analyzed.
All percent recovery and relative percent difference (RPD) criteria were met.

D. Duplicate:

No sample duplicates are reported with this method. (Spike duplicates are referenced above in section C. Spikes.)

E. Serial Dilution:

All acceptance criteria were met.

F. ICP Interference Check Samples:

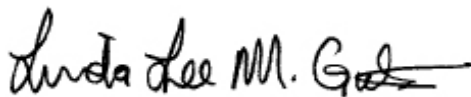
All acceptance criteria were met.

G. Samples:

Sample analysis proceeded normally.

Samples FD-S-051308A, HA-11-S-00 required a 1:2 dilution due to interference with the following analyte(s): Arsenic.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and PEL, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as, verified by the following signature.



SIGNED:

DATE: 05/15/2008

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-01-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925801

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 79.7

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.82 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-03-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925802

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.3

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 10 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-02-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925805

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 82.2

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.41 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-05-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925806

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 82

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 36.3 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-04-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925807

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 84.2

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.94 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-06-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925808

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 79.6

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 18.2 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-07-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925809

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.3

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.11 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-08-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925810

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.2

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 7.39 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-09-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925811

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.9

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.9 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

FD-S-051308A

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925812

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 85.3

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 7.09 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-11-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925813

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 83.9

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.42 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-12-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925814

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 78.7

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.41 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

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1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

FD-S-051308B

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925815

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 83.1

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.02 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-13-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925816

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.9

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.05 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-14-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925817

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.9

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.19 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-15-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925818

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 80.6

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 9.14 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-16-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925819

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 81.8

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 5.47 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.FW

HA-10-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Lab Sample ID: 250925820

Level:(low/med) LOW

Date Received: 5/14/2008

PercentSolids: 85.6

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7440-38-2 | Arsenic | 8.06 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

150508 1711

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc.

Contract: SLOP RI / 364298.01.SL.RI.FW

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Preparation Blank Matrix (water/soil):

SOIL

Preparation Blank Concentration Units (ug/L or mg/Kg):

MG/KG

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|---|---|---|-------------------|---|---|
| | | C | C | | C | | C | | C | | |
| Arsenic | 5 | U | 5 | U | 5 | U | 5 | U | 0.5 | U | P |

ICB IDs: P= ICB604537

CCB1 IDs: P= CCB604542

CCB2 IDs: P= CCB604554

CCB3 IDs: P= CCB604555

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc.

Contract: SLOP RI / 364298.01.SL.RI.FW

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Preparation Blank Matrix (water/soil):

Preparation Blank Concentration Units (ug/L or mg/Kg):

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|---|-------------------|---|---|
| | | C | C | C | C | C | C | C | |
| Arsenic | | | 5 | U | 5 | U | 5 | U | P |

ICB IDs:

CCB1 IDs: P= CCB604568

CCB2 IDs: P= CCB604580

CCB3 IDs: P= CCB604592

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-03-S-00MS

Lab Name: PEL, Spectrum Analytical

Contract: SLOP RI / 364298.01.SL.RI.

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------|---------------|---|--------------------|---|------------------|------|---|---|
| Arsenic | 75 - 125 | 52 | C | 10 | C | 43.9 | 95.7 | | P |

Comments:

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-03-S-00SD

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.

Lab Code : PEL Case No. SAS No: SDG No.: 2509258

Matrix: SOIL Level:(low/med) LOW

% Solids for Sample: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|---------------------|---------------|--|--------------------|--|------------------|------|---|---|
| | | C | | C | | | | | |
| Arsenic | 75 - 125 | 49.8 | | 10 | | 43.7 | 91.1 | | P |

Comments:

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-03-S-00A

Lab Name: PEL, Spectrum Analytical, Inc. Contract: SLOP RI / 364298.01.SL.RI.

Lab Code : PEL Case No. SAS No: SDG No.: 2509258

Matrix: Soil Level:(low/med) LOW

Concentration Units (ug/L or mg/kg): ug/L

| Analyte | Control Limit %R | Spiked Sample C | Sample Result (SR) C | Spike Added (SA) | %R | Q | M |
|---------|------------------------|--------------------|----------------------------|---------------------|------|---|---|
| Arsenic | 80 - 120 | 602.00 | 114.60 | 500 | 97.6 | | P |

Comments:

U.S. EPA - CLP
6
DUPLICATES

EPA Sample No.
262202LCSD

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.F

Lab Code : PEL Case No. SAS No: SDG No.: 2509258

Matrix: SOIL Level:(low/med) LOW

% Solids for Sample: 100 % Solids for Duplicate: 100

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|------------------|------------|---|---------------|---|-----|---|---|
| Arsenic | 20 | 48.4 | | 49.2 | | 1.6 | | P |

Comments:

U.S. EPA - CLP
6
DUPLICATES

EPA Sample No.
HA-03-S-00SD

Lab Name: PEL, Spectrum Analytical Contract: SLOP RI / 364298.01.SL.RI.F

Lab Code : PEL Case No. SAS No: SDG No.: 2509258

Matrix: SOIL Level:(low/med) LOW

% Solids for Sample: 80.3 % Solids for Duplicate: 80.3

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|---------------|------------|---|---------------|---|-----|---|---|
| Arsenic | 20 | 52 | | 49.8 | | 4.3 | | P |

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical

Contract: SLOP RI / 364298.01.SL.RI.

262201LCS

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|---|-----|------|
| | True | Found | %R | True | Found | C | Limits | | | %R |
| Arsenic | | | | 50 | 48.4 | | 80 | - | 120 | 96.8 |

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical

Contract: SLOP RI / 364298.01.SL.RI.

262202LCSD

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509258

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|-------|------|--|
| | True | Found | %R | True | Found | C | Limits | | %R | |
| Arsenic | | | | 50 | 49.2 | | 80 | - 120 | 98.4 | |



PEL a division of Spectrum Analytical, Inc.

featuring HANIBAL TECHNOLOGY



Customer Name: CH2M Hill
Date and Time Received: 5/15/2008 8:40:00 AM
Date Reported: 5/19/2008
Laboratory Submission Number/SDG: 2509265
Project: 364298.01.SL.RI.FW

Samples: The submission consisted of 5 samples with sample identification shown in the attached data tables.

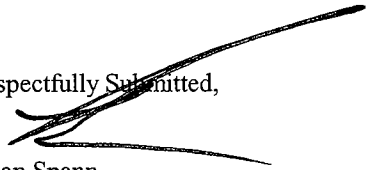
Tests: The samples were analyzed for the methods listed on the attached table of contents.

Results: See the attached data tables for results.

Distribution of Report to:

CH2M Hill
Attn: Dave Lee
Phone: W 314-421-0900

Respectfully Submitted,


Brian Spann
Laboratory Director
PEL a division of Spectrum Analytical, Inc.
featuring Hanibal Technology

Note: Submitted material will be retained for 30 days unless otherwise requested by client or consumed in analysis. PEL letters and reports are for the exclusive use of the client to whom they are addressed. Our Letters and reports apply to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar materials

8405 Benjamin Road, Suite A • Tampa, Florida 33634
813-888-9507 • FAX: 800-480-6435
Website: www.pelab.com

| | |
|---|-----------|
| Inorganics | 2 |
| METALS DATA PACKAGE TOTALS | 5 |
| Sample Data | 9 |
| QC Summary | 13 |
| Chain of Custody Documentation | 32 |
| Addendum | 37 |

EXECUTIVE SUMMARY - Detection Highlights

2509265

SAMPLE ID: FD-051408B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Lead | 15 | 0.563 | MG/KG | SW6010B |

SAMPLE ID: HA-20-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Lead | 54.8 | 0.531 | MG/KG | SW6010B |

SAMPLE ID: HA-21-S-00

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|-----------|--------|--------------------|-------|----------------------|
| Lead | 31 N | 0.64 | MG/KG | SW6010B |

Inorganics

Inorganic Data Qualifiers

C (Concentration) Qualifier - Entries and their meanings are:

- B** The reported value obtained was less than the RL but greater than or equal to the MDL.
- E** The reported value obtained was over calibration or linear range.
- U** The reported value obtained was less than the MDL or was not detected.

Q Qualifier - Entries and their meanings are:

- U** The reported value is estimated because of interference. An explanatory comment must be included under "Comments" on the Cover Page if the problem applies to all samples in this data package or on the individual FORM 1 if it is an isolated problem.
- M** Duplicate injection precision was not met (two analyses of the same sample did not agree).
- N** Spiked sample recovery not within control limits.
- E** Serial Dilution percent difference not within control limits.
- S** The reported value was determined by the Method of Standard Additions (MSA).
- W** Post-digestion spike for Furnace AA analysis is out of control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
- *** Duplicate analysis not within control limits.
- +** Correlation coefficient for the MSA is less than 0.995.
- X** The data is flagged as rejected by analyst utilizing analytical judgement.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field.

M (Method) Qualifier - Enter one of the following:

- P** ICP
- A** Flame AA
- F** Furnace AA
- CV** Manual Cold Vapor AA
- TC** Total Organic Carbon
- AS** Semi-Automated Spectrophotometric
- CA** Midi-Distillation Spectrophotometric
- T** Titrimetric
- C** Manual Spectrophotometric
- GR** Gravimetric
- NR** Analyte was not required by your lab

Inorganic Sample ID Qualifiers

The qualifiers that may be appended to the lab sample ID and/or the client sample ID for inorganic analysis are defined below:

- DL** Diluted reanalysis. Indicates that the results of the original analysis of the sample contained compounds that exceeded the calibration range. The sample was diluted and reanalyzed. May be followed by a digit to indicate multiple dilutions of the sample. The results of more than one diluted reanalysis may be reported.
- R** Reanalysis. The extract was reanalyzed without re-extraction. The "R" is not used if the sample was also re-extracted. May be followed by a digit to indicate multiple reanalysis of the sample at the same dilution.
- RE** Re-extracted. The extract was reanalyzed with re-extraction. May be followed by a digit to indicate multiple re-extraction of the same sample at the same dilution.
- MS** Matrix spike (may be followed by a digit to indicate multiple matrix within a sample set).
- SD** Matrix spike duplicate (may be followed by a digit to indicate multiple matrix spike duplicate within a sample set).
- A** Post Digestion Spike.
- L** Serial Dilution.

METALS DATA PACKAGE TOTALS

CASE NARRATIVE METALS

PEL Lab Reference No./SDG: 2509265

Client: CH2M Hill

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody or a communication form is included in the addendum with this package.

II. HOLDING TIMES

A. Sample Preparation: All holding times were met.

B. Sample Analysis: All holding times were met.

III. METHOD

Analyses were performed according to the PEL, a Division of Spectrum Analytical, Standard Operating Procedures and EPA Method 6010B for ICP metals.

IV. PREPARATION

Soil samples were prepared according to PEL Laboratory's Standard Operating Procedures and EPA Method 3050B.

V. ANALYSIS

A. Calibration:

All acceptance criteria were met.

B. Blanks:

1. Calibration Blanks:

All acceptance criteria were met.

2. Method Blanks:

All acceptance criteria were met.

C. Spikes:

1. Laboratory Control Spikes (LCS):

An LCS/LCSD set was analyzed.

All percent recovery and relative percent difference (RPD) criteria were met.

2. Post Digestion Spike:

All acceptance criteria were met.

**CASE NARRATIVE
METALS**

PEL Lab Reference No./SDG: 2509265

Client: CH2M Hill

3. Matrix Spike/Matrix Spike Duplicate Samples (MS/SD):

A client requested MS/SD set was analyzed.
All percent recovery and relative percent difference (RPD) criteria were met with the exception of:
SD - HA-21-S-00SD was analyzed with the soil samples on 05/16/08. The following analyte(s) were recovered below criteria: Lead at 69.7 % with criteria of (75-125).
Samples coded accordingly.

D. Duplicate:

No sample duplicates are reported with this method. (Spike duplicates are referenced above in section C. Spikes.)

E. Serial Dilution:

All acceptance criteria were met.

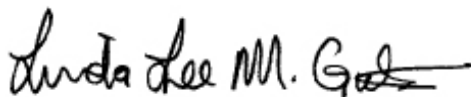
F. ICP Interference Check Samples:

All acceptance criteria were met.

G. Samples:

Sample analysis proceeded normally.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and PEL, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as, verified by the following signature.



SIGNED:

DATE: 05/16/2008

U.S. EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
Lab Code : PEL Case No.: SDG No.: 2509265
SOW No.:

| EPA Sample No | Lab Sample ID |
|----------------------|----------------------|
| <u>HA-20-S-00</u> | <u>250926501</u> |
| <u>FD-051408B</u> | <u>250926502</u> |
| <u>HA-21-S-00</u> | <u>250926503</u> |

Were ICP interelement corrections applied? Yes/No Yes

Were ICP background corrections applied? Yes/No Yes

If yes - were raw data generated before
application of background corrections? Yes/No No

Comments:

Sample Data

190508 1027

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

HA-20-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509265Matrix: SOIL Lab Sample ID: 250926501Level:(low/med) LOW Date Received: 5/15/2008PercentSolids: 86.6 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 54.8 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1027

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

FD-051408B

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509265Matrix: SOIL Lab Sample ID: 250926502Level:(low/med) LOW Date Received: 5/15/2008PercentSolids: 84.7 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 15 | | | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1027

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

HA-21-S-00

Lab Code : PEL Case No.: _____ SAS No: _____ SDG No.: 2509265Matrix: SOIL Lab Sample ID: 250926503Level:(low/med) LOW Date Received: 5/15/2008PercentSolids: 86.8 Station ID: _____CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 31 | | N | P |

Color Before: _____ Clarity Before: _____ Texture : _____

Color After : _____ Clarity After: _____ Artifacts: _____

Comments:

190508 1027

QC Summary

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 Initial Calibration Source: 23085

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|---------|--------|------------------------|---------|--------|---------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Lead | 400 | 420.000 | 105.0 | 500 | 508.000 | 101.6 | 488.000 | 97.6 | P |

ICV IDs: P= ICV604939

CCV1 IDs: P= CCV604944

CCV2 IDs: P= CCV604956

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1027

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 Initial Calibration Source:

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|-------|--------|------------------------|---------|--------|---------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Lead | | | | 500 | 487.000 | 97.4 | 533.000 | 106.6 | P |

ICV IDs:

CCV1 IDs: P= CCV604957

CCV2 IDs: P= CCV604963

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1027

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 Initial Calibration Source:

Continuing Calibration Source: 23977

Concentration Units: (ug/L)

| Analyte | Initial Calibration | | | Continuing Calibration | | | | | M |
|---------|---------------------|-------|--------|------------------------|---------|--------|-------|--------|---|
| | True | Found | %R (1) | True | Found | %R (1) | Found | %R (1) | |
| Lead | | | | 500 | 508.000 | 101.6 | | | P |

ICV IDs:

CCV1 IDs: P= CCV604964

CCV2 IDs:

(1) Control Limits: Mercury 80-120; Cyanide 85-115; Other Metals 90-110

ICV is Second Source

190508 1027

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 Preparation Blank Matrix (water/soil): SOIL
 Preparation Blank Concentration Units (ug/L or mg/Kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|-----|---|-----|---|-------------------|---|---|
| | | C | C | | C | | C | | C | | |
| Lead | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 0.34 | U | P |

ICB IDs: P= ICB604940

CCB1 IDs: P= CCB604945

CCB2 IDs: P= CCB604958

CCB3 IDs: P= CCB604959

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Preparation Blank Matrix (water/soil):

Preparation Blank Concentration Units (ug/L or mg/Kg):

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|--|--|---|-------------------|--|---|
| | | C | C | | C | | | C | C | | |
| Lead | | | 3.4 | U | | | | | | | P |

ICB IDs:

CCB1 IDs: P= CCB604965

CCB2 IDs:

CCB3 IDs:

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 ICP ID#: ICAP2 ICSA Source: 23556
 ICSAB Source: 23557

Concentration Units: UG/L

| Analyte | True | | Initial Found | | | Final Found | | |
|---------|------|------|---------------|--------|------|-------------|------|----|
| | Sol. | Sol. | Sol. | Sol. | | Sol. | Sol. | |
| | A | AB | A | AB | %R | A | AB | %R |
| Lead | 0 | 50 | 0 | 46.654 | 93.3 | | | |

ICSA: ICS604942

ICSAB: ICS604943

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

HA-21-S-00MS

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 86.8

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Lead | 75 - 125 | 66.7 | | 31 | | 39.7 | 89.9 | | P |

Comments:

190508 1027

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW EPA Sample No. HA-21-S-00SD
Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
Matrix: SOIL Level:(low/med) LOW
% Solids for Sample: 86.8

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Lead | 75 - 125 | 59.1 | | 31 | | 40.3 | 69.7 | N | P |

Comments:

190508 1027

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5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

HA-21-S-00A

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Matrix: Soil Level:(low/med) LOW

Concentration Units (ug/L or mg/kg): ug/L

| Analyte | Control Limit %R | Spiked Sample C | Sample Result (SR) C | Spike Added (SA) | %R | Q | M |
|---------|------------------------|--------------------|----------------------------|---------------------|------|---|---|
| Lead | 80 - 120 | 852.00 | 387.38 | 500 | 92.9 | | P |

Comments:

190508 1027

U.S. EPA - CLP

6

DUPLICATES

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

262465LCSD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 100

% Solids for Duplicate: 100

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|------------------|------------|---|---------------|---|-----|---|---|
| Lead | 20 | 51.9 | | 51.5 | | 0.8 | | P |

Comments:

190508 1027

U.S. EPA - CLP

6

DUPLICATES

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

HA-21-S-00SD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 86.8

% Solids for Duplicate: 86.8

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q | M |
|---------|------------------|------------|---|---------------|---|------|---|---|
| Lead | 20 | 66.7 | | 59.1 | | 12.1 | | P |

Comments:

190508 1027

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

262464LCS

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|---|-----|-------|
| | True | Found | %R | True | Found | C | Limits | | | %R |
| Lead | | | | 50 | 51.9 | | 80 | - | 120 | 103.8 |

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

EPA Sample No.

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

262465LCSD

Lab Code : PEL Case No.: SAS No: SDG No.: 2509265

Solid LCS Source: 23554, 22381

Aqueous LCS Source:

| Analyte | Aqueous | | | Solid (MG/KG) | | | | | | |
|---------|---------|-------|----|---------------|-------|---|--------|---|-----|-------|
| | True | Found | %R | True | Found | C | Limits | | | %R |
| Lead | | | | 50 | 51.5 | | 80 | - | 120 | 103.0 |

U.S. EPA - CLP
9
SERIAL DILUTIONS

| | | | |
|---|-------------------------------------|-----------------------------------|-------------------------|
| | | EPA Sample No. | |
| Lab Name: <u>PEL, Spectrum Analytical</u> | Contract: <u>364298.01.SL.RI.FW</u> | HA-21-S-00L | |
| Lab Code : <u>PEL</u> | Case No.: <u> </u> | SAS No: <u> </u> | SDG No.: <u>2509265</u> |
| Matrix: <u>Soil</u> | Level:(low/med) <u>LOW</u> | | |

Concentration Units (ug/L or mg/kg): ug/L

| Analyte | Initial Sample | | Serial | | % Differ- ence | Q | M |
|---------|----------------|---|------------------------|---|----------------------|---|---|
| | Result (I) | C | Dilution Result (S) | C | | | |
| Lead | 387.38 | | 389.00 | | 0.42 | | P |

Comments:

190508 1027

U.S. EPA - CLP

10

METHOD DETECTION LIMITS

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 ICP ID Number : ICAP2
 Furnace AA ID Number :

| Analyte | Wave-length (nm) | Raw MDL (UG/L) | CRDL (MG/KG) | MDL (MG/KG) | Verification Date | M |
|---------|------------------|----------------|--------------|-------------|-------------------|---|
| Lead | 220.353 | 3.4 | 0.8 | 0.34 | 4/24/2008 | P |

Comments:

190508 1028

U.S. EPA - CLP

12

ICP LINEAR RANGES (SEMI-ANNUALLY)

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW
 Lab Code : PEL Case No.: SAS No: SDG No.: 2509265
 ICP ID NUMBER : ICAP2 DATE : 10/31/2007

| Analyte | Integ. Time (sec.) | Concentration UG/L | M |
|---------|--------------------------|-----------------------|---|
| Lead | 0 | 5000 | P |

Comments:

190508 1028

U.S. EPA - CLP

13

PREPARATION LOG

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FWLab Code : PEL Case No.: SAS No: SDG No.: 2509265Method : 6010

| EPA Sample No: | Preparation Date | Weight (gram) | Volume (mL) |
|----------------------|---------------------|------------------|----------------|
| 262463BLK | 15 May 08 | 0.5 | |
| 262464LCS | 15 May 08 | 0.5 | |
| 262465LCSD | 15 May 08 | 0.5 | |
| FD-051408B | 15 May 08 | 0.839 | |
| HA-20-S-00 | 15 May 08 | 0.87 | |
| HA-21-S-00 | 15 May 08 | 0.72 | |
| HA-21-S-00MS | 15 May 08 | 0.725 | |
| HA-21-S-00SD | 15 May 08 | 0.714 | |

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

Lab Code: PEL Case No.: SAS No: SDG No.: 2509265

Instrument ID Number: ICAP2 Method: P

Start Date: 5/16/2008 End Date: 5/16/2008

| EPA Sample No. | D/F | Time | %R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-----|-------|----|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| | | | | A | A | A | B | B | C | C | C | C | C | F | H | K | L | M | M | N | N | P | S | S | S | S | T | T | V | Z | |
| | | | | G | L | S | A | E | A | D | N | O | R | U | E | G | I | G | N | O | A | I | B | B | E | N | R | I | L | N | |
| CAL01 | 1 | 11:34 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CAL02 | 1 | 11:38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAL03 | 1 | 11:43 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CAL04 | 1 | 11:47 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CAL05 | 1 | 11:51 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CAL06 | 1 | 11:55 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ICV604939 | 1 | 12:01 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ICB604940 | 1 | 12:05 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ZZZZZZ | 1 | 12:09 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICSA | 1 | 12:13 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ICSAB | 1 | 12:28 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCV604944 | 1 | 12:32 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCB604945 | 1 | 12:38 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ZZZZZZ | 50 | 12:43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 262463BLK | 1 | 12:47 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| 262464LCS | 1 | 12:52 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| 262465LCSD | 1 | 12:56 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-21-S-00 | 1 | 13:00 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-21-S-00L | 5 | 13:04 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-21-S-00MS | 1 | 13:08 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-21-S-00SD | 1 | 13:12 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-21-S-00A | 1 | 13:17 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| HA-20-S-00 | 1 | 13:21 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCV604956 | 1 | 13:25 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCV604957 | 1 | 13:28 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCB604958 | 1 | 13:32 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCB604959 | 1 | 13:35 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| FD-051408B | 1 | 13:39 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| ZZZZZZ | 2 | 13:46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 2 | 13:50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV604963 | 1 | 13:54 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCV604964 | 1 | 13:57 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| CCB604965 | 1 | 14:01 | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |

Chain of Custody Documentation



Chain of Custody Record Record/Work Request

8405 Benjamin Rd, Suite A
Tampa, FL 33634
Phone: 813-888-9507
E-Mail: login@pelab.com

2509265 KC

| | | | | | | | | | | | | | |
|--|--------------|---|--------------|--|--------------------|--------------------------------|----------------------------|--------------|-----------------------------|---------------------------|--|-------------|--|
| Company: CH2M Hill | | Project Name/Number: 364298.01.SL.RI.FW | | Page of | | | | | | | | | |
| Address: 727 N. First ST, STE#400 | | Project Manager: Chris English | | DEP Form #: 62-770.900(2) Form Title: Chain of Custody Record Effective Date: September 23, 1997 FDEP Facility No. Project Name: | | | | | | | | | |
| Phone: 314-421-0900 Fax: | | Purchase Order: | | Sampling CompQAP No: Approval Date: | | | | | | | | | |
| Print Names(s) / Affiliation Glynn Roberts/CH2M Hill | | Preservatives (see codes) I I I | | REQUESTED DUE DATE / / | | | | | | | | | |
| Sampler(s) Signature(s) [Signature] | | Analyses Requested [X] [X] [X] | | Remarks | | | | | | | | | |
| Item No. | Field ID No. | Sampled Date | Sampled Time | Grab or Composite | Matrix (see codes) | Number of Containers | Lead | TAH | Lab. No. | | | | |
| 1 | HA-18-S-00 | 5/14/08 | 1457 | Composite | SO | 1 | X | | 10-DAY TAT | | | | |
| 2 | FD-S-051408A | 5/14/08 | 1454 | Composite | SO | 1 | X | | 10-DAY TAT | | | | |
| 3 | HA-17-S-00 | 5/14/08 | 1505 | Composite | SO | 1 | X | | 10-DAY TAT | | | | |
| 4 | HA-19-S-00 | 5/14/08 | 1514 | Composite | SO | 1 | X | | 10-DAY TAT | | | | |
| 5 | HA-20-S-00 | 5/14/08 | 1528 | Composite | SO | 1 | X | | 24-hr TAT 01 | | | | |
| 6 | FD-051408B | 5/14/08 | 1530 | Composite | SO | 1 | X | | 24-hr TAT 02 | | | | |
| 7 | HA-21-S-00 | 5/14/08 | 1532 | Composite | SO | 3 | X | | MS/MSD 24-hr TAT 03, 04, 05 | | | | |
| 8 | HA-22-S-00 | 5/14/08 | 1600 | Composite | SO | 4 | X | X | MS/MSD 10-DAY TAT | | | | |
| 9 | FD-051408C | 5/14/08 | 1605 | Composite | SO | 1 | X | X | 10-DAY TAT | | | | |
| Shipment Method | | | | | | 14 | Total Number of Containers | | | | | | |
| Out: 5/14/08 | | Via: FedEx | | Item Nos. | | Relinquished by / Affiliations | | Date Time | | Accepted by / Affiliation | | Date Time | |
| Returned: / / | | Via: | | | | [Signature] | | 5/16/08 1446 | | | | | |
| Additional Comments: | | | | | | [Signature] | | 5/14/08 1600 | | [Signature] | | 5/15/08 840 | |
| Cooler No. (s) / Temperature(s) (C) | | | | | | Sampling Kit No. | | | Equipment ID No. | | | | |
| 4.00 | | | | | | | | | | | | | |
| MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify) | | | | | | | | | | | | | |
| PRESERVATION CODES: H-Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify) | | | | | | | | | | | | | |

FedEx US Airbill

Express

FedEx
Tracking
Number

8635 0172 4584

Recipient's Copy

1 From
Date 5/14/08

Sender's Name 67th Roberts

Phone

Company CH2M HILL

Address 717 N. Fifth St STE 240

City STL

State MO

ZIP 63102

2 Your Internal Billing Reference 364298.01.5L RI. FW/41500

3 To Recipient's Name Sample Receiving

Phone 813 888-9507

Company PCL Laboratories

Recipient's Address 8405 Benjamin Road STE A

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City Tampa

State FL

ZIP 33634



8635 0172 4584

4a Express Package Service

☒ FedEx Priority Overnight

Next business morning. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Standard Overnight

Next business afternoon. Saturday Delivery NOT available.

☐ FedEx First Overnight

Earliest next business morning delivery to select locations. Saturday Delivery NOT available.

☐ FedEx 2Day

Second business day. Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Express Saver

Third business day. Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service

☐ FedEx 1Day Freight

Next business day. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 2Day Freight

Second business day. Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight

Third business day. Saturday Delivery NOT available.

* Call for Confirmation.

** To most locations.

5 Packaging

☐ FedEx Envelope

☐ FedEx Pak Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.

☐ FedEx Box

☐ FedEx Tube

☒ Other Declared value limit \$500.

6 Special Handling

☐ SATURDAY Delivery

Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

☐ HOLD Weekday at FedEx Location

Not available for FedEx First Overnight.

☐ HOLD Saturday at FedEx Location

Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

☒ No ☐ Yes As per attached Shipper's Declaration.

☐ Yes Shipper's Declaration not required.

☐ Dry Ice Dry Ice, S, UN 1845

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

☐ Cargo Aircraft Only

7 Payment Bill to:

☒ Sender Acct. No. in Section 1 will be billed.

Enter FedEx Acct. No. or Credit Card No. below.

☐ Recipient ☐ Third Party ☐ Credit Card

Obtain Recip. Acct. No.

☐ Cash/Check

Total Packages 100 Total Weight 6.5 Total Declared Value \$.00

Our liability is limited to \$100 unless you declare a higher value. See back for details.

Credit Card Auth.

8 Residential Delivery Signature Options

If you require a signature, check Direct or Indirect.

☐ No Signature Required Package may be left without obtaining a signature for delivery.

☐ Direct Signature Someone at recipient's address may sign for delivery. Fee applies.

☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies.

520

Rev. Date 10/06-Part #192281-©1994-2006 FedEx-PRINTED IN U.S.A. SRY

fedex.com 1.800.GoFedEx 1.800.463.3339

fedex.com 1.800.GoFedEx 1.800.463.3339

SAMPLE RECEIPT CONFIRMATION SHEET

Client Information

| | | | |
|-------------------|-----------|--------------------|----------------------|
| SDG: | 2509265 | Req: | 85624 |
| Client: | CH2M Hill | Project: | Hanley Area |
| Level: | 3 | Date Rec'd: | 5/15/2008 8:40:00 AM |
| Rec'd via: | Fed-Ex | Due Date: | 05/16/08 |

Sample Verification

| | | | |
|--|---------------------------------------|--|-----------------------------------|
| Samples/Cooler Secure? | <input type="text" value="Yes"/> | All Samples on COC accounted For? | <input type="text" value="Yes"/> |
| Temperature of Samples(Celsius) | <input type="text" value="4.0C"/> | All Samples Rec'd Intact? | <input type="text" value="Yes"/> |
| pH Verified? | <input type="text" value="No"/> | Sample Vol. Stuff. For Analysis? | <input type="text" value="Yes"/> |
| pH WNL? | <input type="text" value="No"/> | Samples Rec'd W/I Hold Time? | <input type="text" value="Yes"/> |
| Soil Origin (Domestic/Foreign): | <input type="text" value="Domestic"/> | Are All Samples to be Analyzed? | <input type="text" value="Yes"/> |
| Site Location/Project on COC? | <input type="text" value="Yes"/> | Correct Sample Containers? | <input type="text" value="Yes"/> |
| Client Project # on COC? | <input type="text" value="Yes"/> | COC Comments written on COC? | <input type="text" value="Yes"/> |
| Project Mgr. Indicated on COC? | <input type="text" value="Yes"/> | Samplers Initials on COC? | <input type="text" value="Yes"/> |
| COC relinquished/Dated by Client? | <input type="text" value="Yes"/> | Sample Date/Time Indicated? | <input type="text" value="Yes"/> |
| COC Received/Dated by PEL? | <input type="text" value="Yes"/> | TAT Requested: | <input type="text" value="RUSH"/> |
| Specific Subcontract Indicated? | <input type="text" value="No"/> | Client Requests Verbal Results? | <input type="text" value="No"/> |
| Samples Received By | <input type="text" value="Fed-Ex"/> | Client Requests Faxed Results? | <input type="text" value="No"/> |
| PEL to Conduct ALL Analyses? | <input type="text" value="Yes"/> | | |

PEER REVIEW



Client: CH2M Hill

WONo: 2509265

Profile Name: SLOP2

Profile #: 85624

MATRIX S

| Sample # | Parameter | Relinquished | Received | Date | Time |
|----------|-----------------------|--------------|----------|---------|------|
| 01 - 05 | Dry Weight Dry Weight | KC | PC | 5/15/08 | 1250 |
| 01 - 05 | Dry Weight Dry Weight | PC | KC | 5/15/08 | 150 |
| 01 - 05 | 6010 Metals | KC | JK | 5/15/8 | 1420 |
| 01 - 05 | 6010 Metals | JK | KC | 5/15/8 | 1445 |

Additional:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments:

Addendum

Letter of Acceptance

Customer Name: CH2M Hill

Date and Time Received: 5/15/2008 8:40:00 AM

Date to be Reported: 6/5/2008

Laboratory Submission Number/SDG: 2509265

Get Detailed Analyte List here: www.pelab.com/webdms/Default.asp?LoaSDG=2509265

Project: 364298.01.SL.RI.FW

Samples: The submission consisted of 5 samples with sample identification shown in the attached data tables.

Tests: The Samples will be analyzed for EPA methods: 6010.

Sample Custody/COC discrepancies:
None.

Notes:
24-hr TAT, prelims.

Distribution of Report to:

CH2M Hill
Attn: Dave Lee
Phone: W 314-421-0900

Note: Submitted material will be retained for 30 days unless otherwise requested by client or consumed in analysis. PEL letters and reports are for the exclusive use of the client to whom they are addressed. Our letters and reports apply to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar materials

Log-in Report

Level: 3

Total of: 5 analyses on 5 samples (including QC)

16-May-08

Report/SDG #: 2509265

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|----------------------|----------------------|
| HA-20-S-00 | 250926501 | | SO | 5/14/2008 3:28:00 PM | 5/15/2008 8:40:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|----------------------|----------------------|
| FD-051408B | 250926502 | | SO | 5/14/2008 3:30:00 PM | 5/15/2008 8:40:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|------------|-----------|-----------|--------|----------------------|----------------------|
| HA-21-S-00 | 250926503 | | SO | 5/14/2008 3:32:00 PM | 5/15/2008 8:40:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|--------------|-----------|-----------|--------|----------------------|----------------------|
| HA-21-S-00MS | 250926504 | | SQ | 5/14/2008 3:32:00 PM | 5/15/2008 8:40:00 AM |

Method

6010

Metals

6010

| SampleID | LAB ID | StationID | Matrix | SampleDate | ReceiveDate |
|--------------|-----------|-----------|--------|----------------------|----------------------|
| HA-21-S-00SD | 250926505 | | SQ | 5/14/2008 3:32:00 PM | 5/15/2008 8:40:00 AM |

Method

6010

Metals

6010

Darcy Weisman

From: Darcy Weisman
Sent: Friday, May 16, 2008 4:57 PM
To: 'Dave.Lee@ch2m.com'
Subject: SLOP / SDG 2509265 / prelims

Good afternoon Dave.
Please see attached prelims.

Please note our address has changed:

8405 Benjamin Road, Suite A
Tampa, FL 33634

Thanks,
Darcy

Darcy Weisman
Project Manager, Tampa Division
PEL, a Division of Spectrum Analytical Featuring Hanibal Technology
phone/cell: 813-476-2481
fax: 800-480-6435
email: dweisman@pelab.com

This e-mail is intended for the named addressee(s) and may contain information that is confidential and proprietary. If this information is received by anyone other than the named addressee(s), the recipient(s) should immediately notify the sender by e-mail and promptly delete the transmitted material. In no event shall this material be read, used, stored, or retained by anyone other than the named addressee(s) without the express written consent of the sender or the named addressee(s).

CASE NARRATIVE METALS

PEL Lab Reference No./SDG: 2509265

Client: CH2M Hill

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody or a communication form is included in the addendum with this package.

II. HOLDING TIMES

A. Sample Preparation: All holding times were met.

B. Sample Analysis: All holding times were met.

III. METHOD

Analyses were performed according to the PEL, a Division of Spectrum Analytical, Standard Operating Procedures and EPA Method 6010B for ICP metals.

IV. PREPARATION

Soil samples were prepared according to PEL Laboratory's Standard Operating Procedures and EPA Method 3050B.

V. ANALYSIS

A. Calibration:

All acceptance criteria were met.

B. Blanks:

1. Calibration Blanks:

All acceptance criteria were met.

2. Method Blanks:

All acceptance criteria were met.

C. Spikes:

1. Laboratory Control Spikes (LCS):

An LCS/LCSD set was analyzed.

All percent recovery and relative percent difference (RPD) criteria were met.

2. Post Digestion Spike:

All acceptance criteria were met.

**CASE NARRATIVE
METALS**

PEL Lab Reference No./SDG: 2509265

Client: CH2M Hill

3. Matrix Spike/Matrix Spike Duplicate Samples (MS/SD):

A client requested MS/SD set was analyzed.
All percent recovery and relative percent difference (RPD) criteria were met with the exception of:
SD - HA-21-S-00SD was analyzed with the soil samples on 05/16/08. The following analyte(s) were recovered below criteria: Lead at 69.7 % with criteria of (75-125).
Samples coded accordingly.

D. Duplicate:

No sample duplicates are reported with this method. (Spike duplicates are referenced above in section C. Spikes.)

E. Serial Dilution:

All acceptance criteria were met.

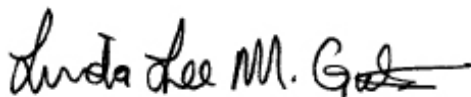
F. ICP Interference Check Samples:

All acceptance criteria were met.

G. Samples:

Sample analysis proceeded normally.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and PEL, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as, verified by the following signature.



SIGNED:

DATE: 05/16/2008

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

HA-20-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Matrix: SOIL

Lab Sample ID: 250926501

Level:(low/med) LOW

Date Received: 5/15/2008

PercentSolids: 86.6

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 54.8 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

FD-051408B

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Matrix: SOIL

Lab Sample ID: 250926502

Level:(low/med) LOW

Date Received: 5/15/2008

PercentSolids: 84.7

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 15 | | | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

160508 1655

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA Sample No.

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

HA-21-S-00

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Matrix: SOIL

Lab Sample ID: 250926503

Level:(low/med) LOW

Date Received: 5/15/2008

PercentSolids: 86.8

Station ID:

CONCENTRATION UNITS: MG/KG

| CAS NO. | ANALYTE | Concentration | C | Q | M |
|-----------|---------|---------------|---|---|---|
| 7439-92-1 | Lead | 31 | | N | P |

Color Before: _____

Clarity Before: _____

Texture : _____

Color After : _____

Clarity After: _____

Artifacts: _____

Comments:

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc.

Contract: 364298.01.SL.RI.FW

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Preparation Blank Matrix (water/soil):

SOIL

Preparation Blank Concentration Units (ug/L or mg/Kg):

MG/KG

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|-----|---|-----|---|-------------------|---|---|
| | | C | C | | C | | C | | C | | |
| Lead | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 0.34 | U | P |

ICB IDs: P= ICB604940

CCB1 IDs: P= CCB604945

CCB2 IDs: P= CCB604958

CCB3 IDs: P= CCB604959

U.S. EPA - CLP

3

BLANKS

Lab Name: PEL, Spectrum Analytical, Inc.

Contract: 364298.01.SL.RI.FW

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Preparation Blank Matrix (water/soil):

Preparation Blank Concentration Units (ug/L or mg/Kg):

| Analyte | Initial Calib. Blank (ug/L) | | Continuing Calibration Blank (ug/L) | | | | | Preparation Blank | | M |
|---------|-----------------------------|---|-------------------------------------|---|---|--|---|-------------------|---|---|
| | | C | C | | C | | C | | C | |
| Lead | | | 3.4 | U | | | | | | P |

ICB IDs:

CCB1 IDs: P= CCB604965

CCB2 IDs:

CCB3 IDs:

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5A

SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-21-S-00MS

Lab Name: PEL, Spectrum Analytical

Contract: 364298.01.SL.RI.FW

Lab Code : PEL

Case No.

SAS No:

SDG No.: 2509265

Matrix: SOIL

Level:(low/med) LOW

% Solids for Sample: 86.8

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| Lead | 75 - 125 | 66.7 | C | 31 | C | 39.7 | 89.9 | | P |

Comments:

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-21-S-00SD

Lab Name: PEL, Spectrum Analytical Contract: 364298.01.SL.RI.FW

Lab Code : PEL Case No. SAS No: SDG No.: 2509265

Matrix: SOIL Level:(low/med) LOW

% Solids for Sample: 86.8

Concentration Units (mg/L or mg/kg): MG/KG

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| | | | C | | C | | | | |
| Lead | 75 - 125 | 59.1 | | 31 | | 40.3 | 69.7 | N | P |

Comments:

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA Sample No.

HA-21-S-00A

Lab Name: PEL, Spectrum Analytical, Inc. Contract: 364298.01.SL.RI.FW

Lab Code : PEL Case No. SAS No: SDG No.: 2509265

Matrix: Soil Level:(low/med) LOW

Concentration Units (ug/L or mg/kg): ug/L

| Analyte | Control Limit %R | Spiked Sample | | Sample Result (SR) | | Spike Added (SA) | %R | Q | M |
|---------|------------------------|---------------|---|-----------------------|---|---------------------|------|---|---|
| Lead | 80 - 120 | 852.00 | C | 387.38 | C | 500 | 92.9 | | P |

Comments: